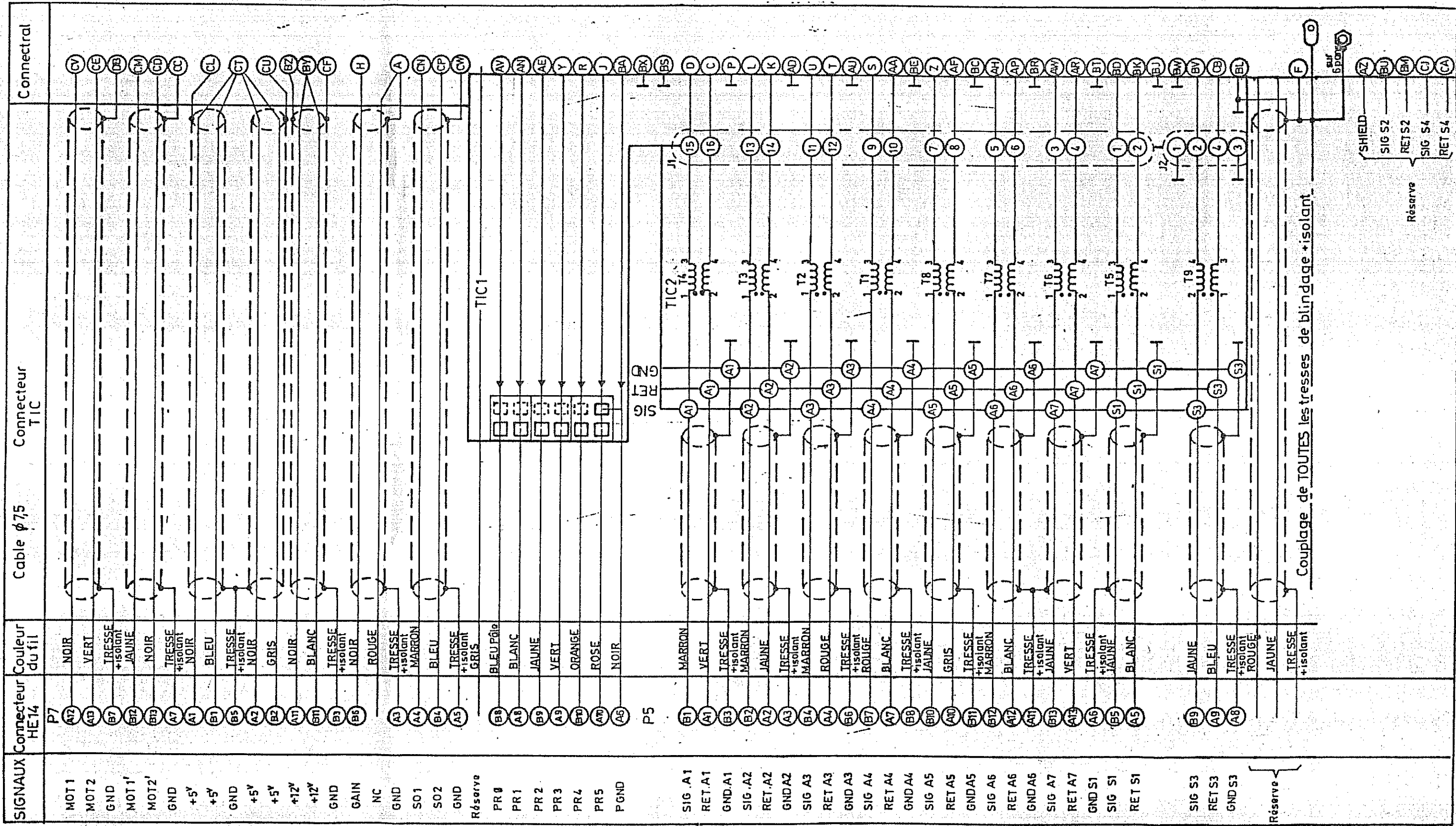


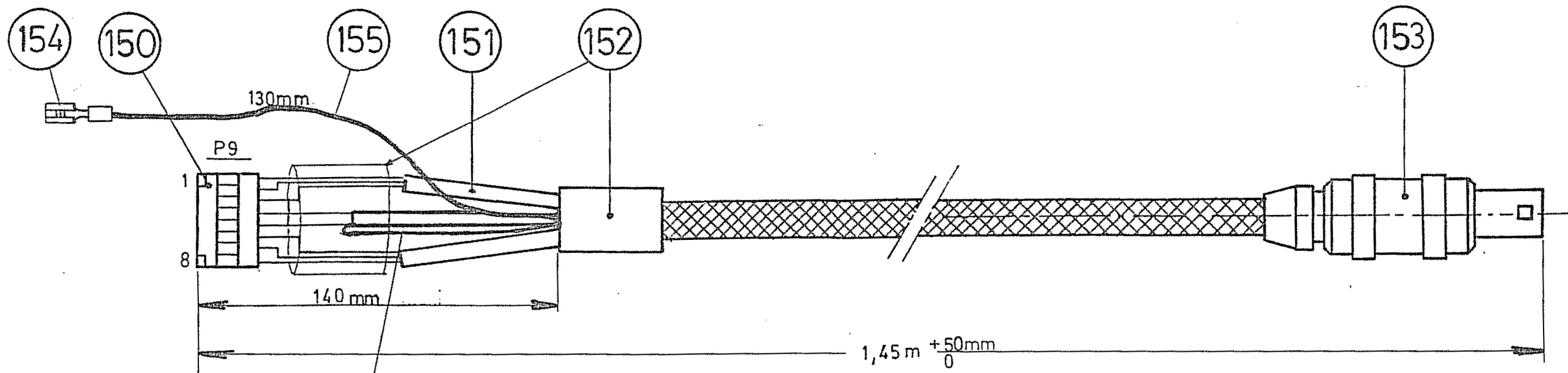
154

163

169

- Pince
- Pince
- Machine
- Pince
- Machine
- Pince





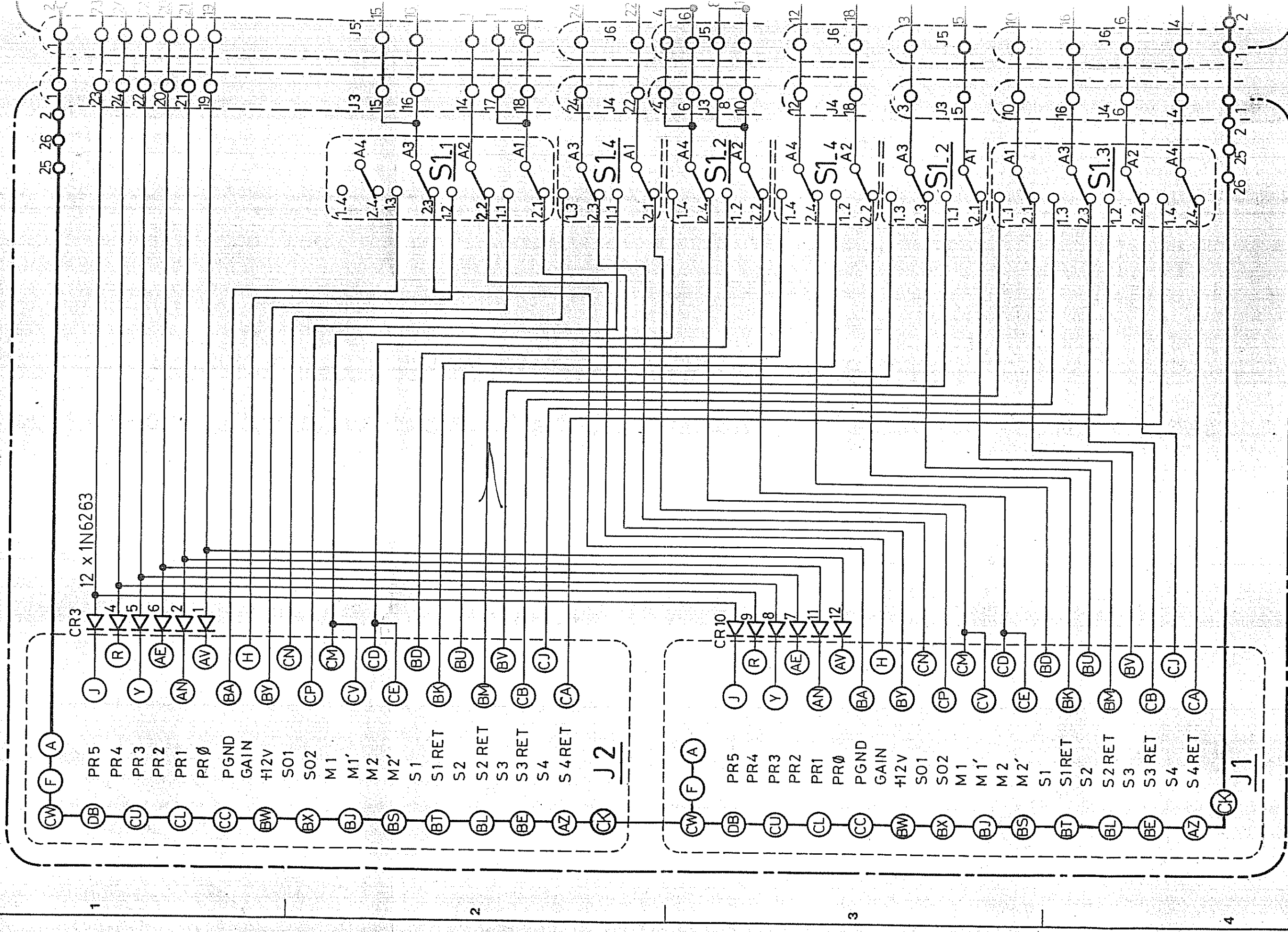
BLINDAGE EXTERIEUR RELIÉ
MECANIQUEMENT SUR PRISE LEMO.

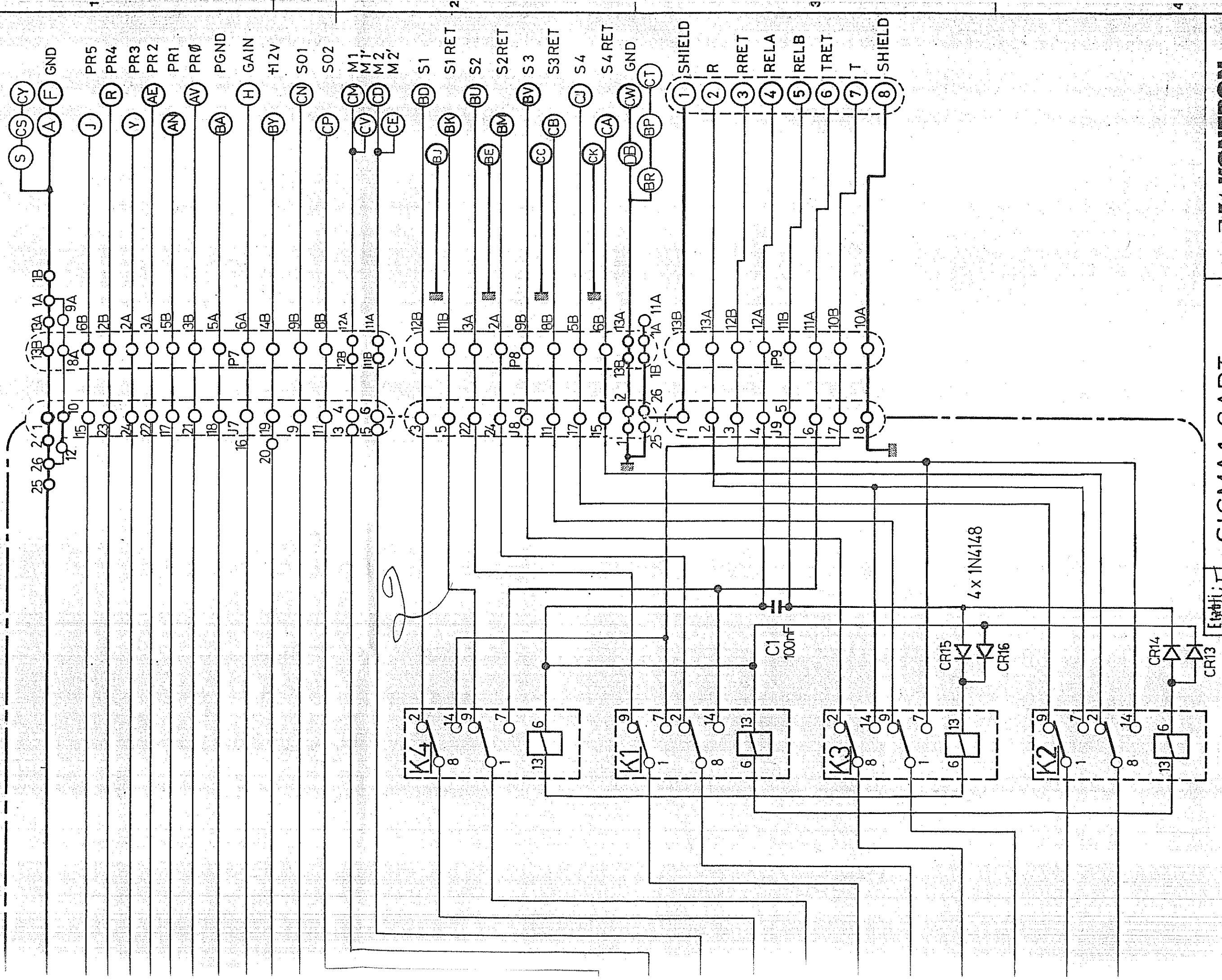
P9		LEMO	
1	---	1	GND
2	---	2	R
3	---	3	RRET
4	---	4	RELA
5	---	5	RELB
6	---	6	TRET
7	---	7	T
8	---	8	GND

Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
		1	Traitement	Poids
			Tolérance Générale	Echelle
Etabli: BIBI	887293			
Date : 26-12-85	SIGMA1 CART CABLE DOPPLER			
Vérifié: Y.P. 17/04/86	COM AA / COM WOB			
03-180B003			3	23-2 88
			Edi.	Date

2 transpo le 23.10/86 JB 2A) Ajout manchon 159. Longueur lous. 1,3m → 1,45m 1 (3) Valid le 23.2.89 JB
MODIFICATIONS de 26/12/85 Creation - 00 Modif dev 25/03/86 Valid le 21.5.86 GRD - 1A Masse Ajoutée 15/10/86 JB

PCA1 COM WOB

[illegible]



Etabli par

SIGMA1 CART

Date

COM WOB

Vérifié

PCA 1 863629 — PCA2 863645

KONTROL
INSTRUMENTS

03-175c001

2

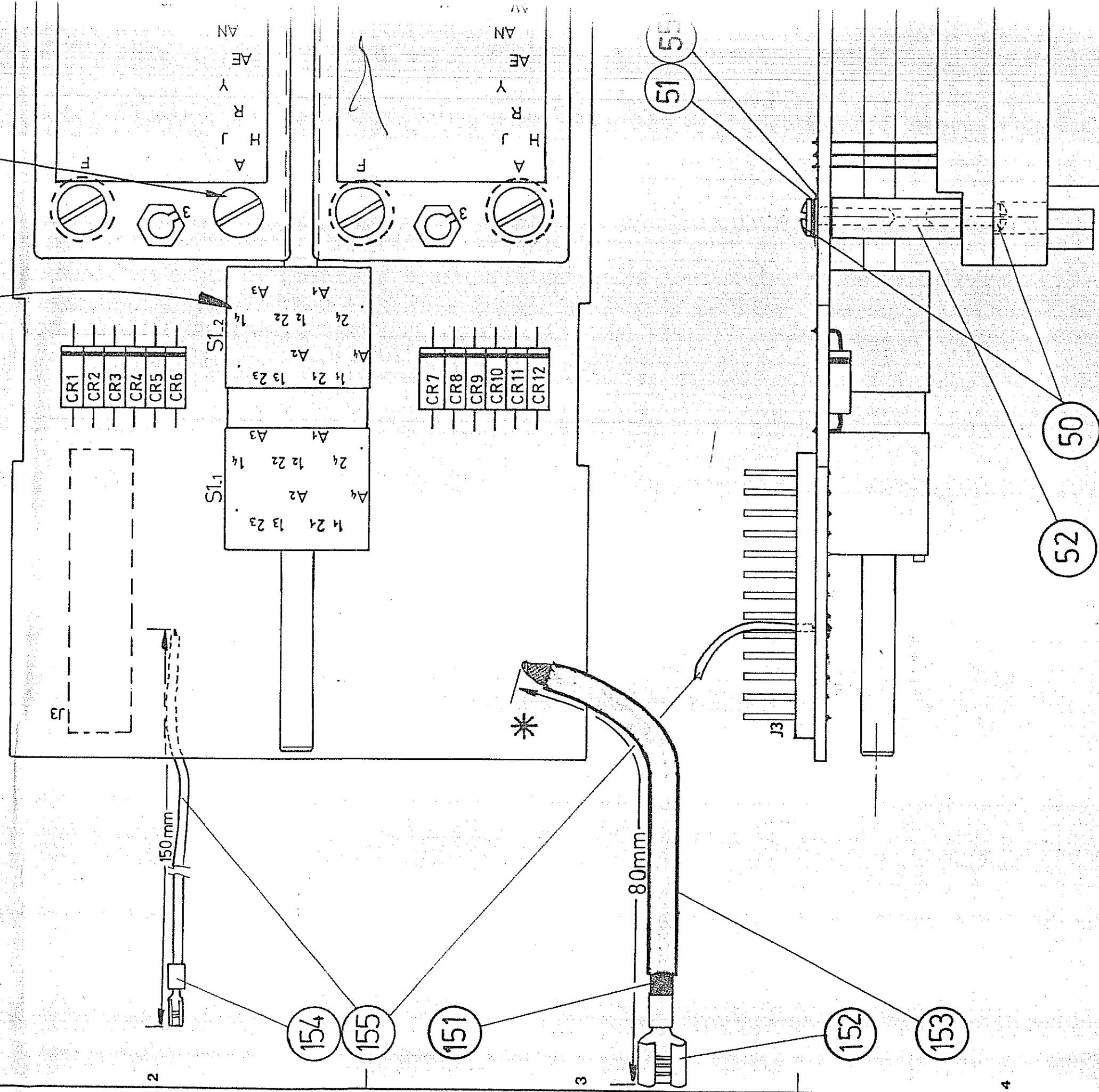
Edi.

Date

Ce document est la propriété de Kontrol et ne peut être reproduit ou communiqué sans autorisation écrite

MONTER LE COMMUTATEUR UNIQUEMENT APRES
LE BAIN DE NETTOYAGE.

NE PAS MONTER D
/ (RESERVE POL



③ Valde 2B.6.88JB	3A) DC N° 03-30-118	25-7-30 BYM	(4) Valde 2B.6.25-7-90-
-------------------	---------------------	-------------	-------------------------

MODIFICATIONS

0A) creation 15/11/85 = 0B) Modif Haine 8/01/86 0C) Modif fil de mesure 6/06/86 0D) Validé le 19-06-86 GBD 0E) Precision cableage 14/10/86 0F)

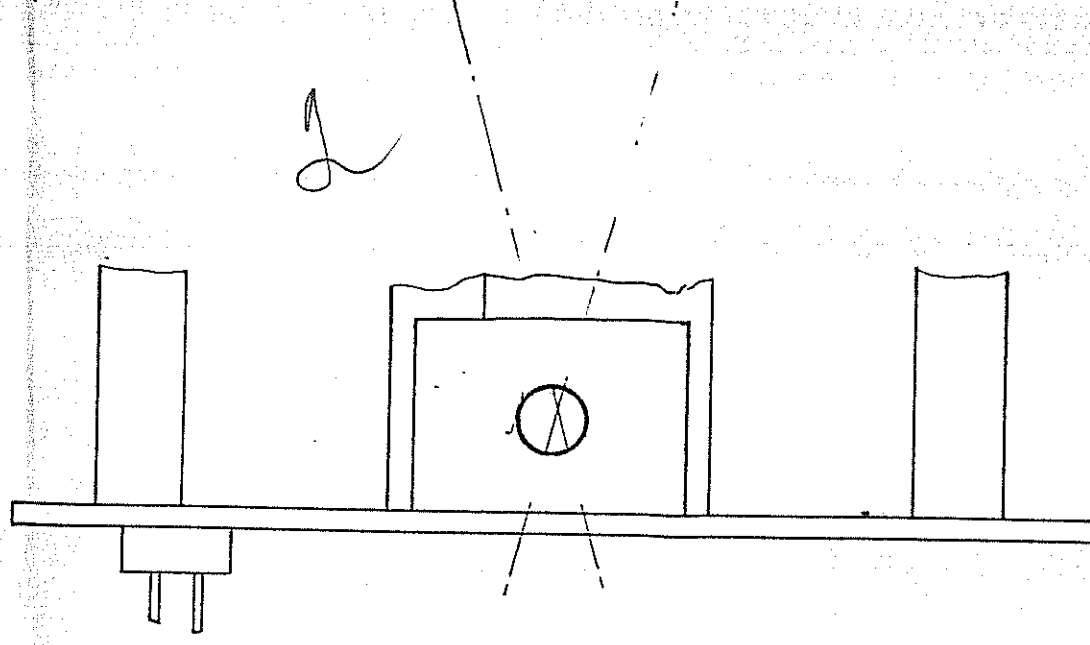
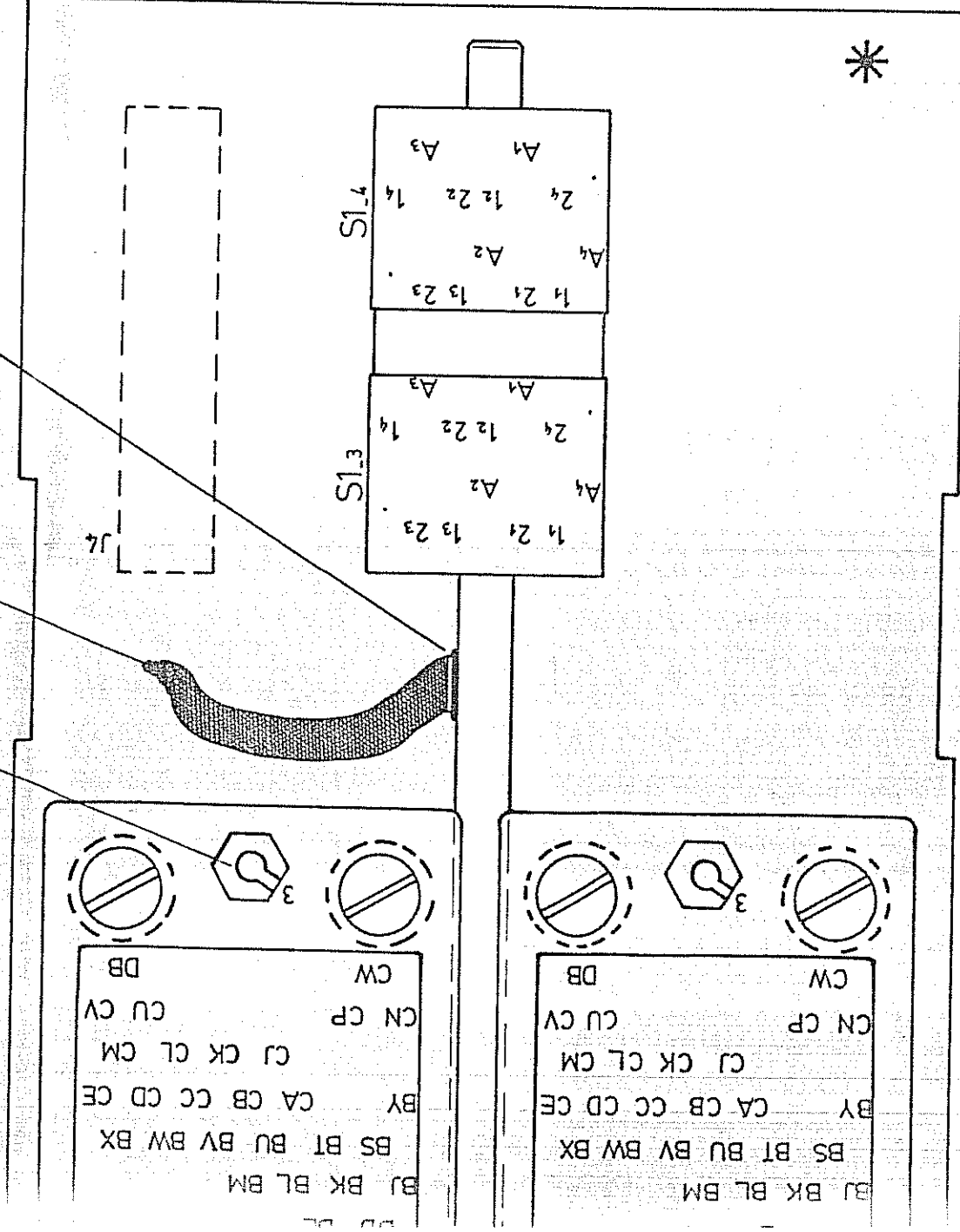
- Positionner les detrompeurs en 3 avant soudure de J1 et J2.

- A. DEPOLIR A LA LIME FINE
- B. DEPOSER DU DECAPANT CASTOLIN 157A
- C. UTILISER UN FER A SOUDER 150W
- D. ETAMER
- E. ELIMINER LE DECAPANT AVEC COTON TIGE PLUS ALCOOL.
- F. SOUDER LA TRESSE DE MASSE SUR L'AXE
- G. NETTOYER AVEC COTON TIGE PLUS ALCOOL.

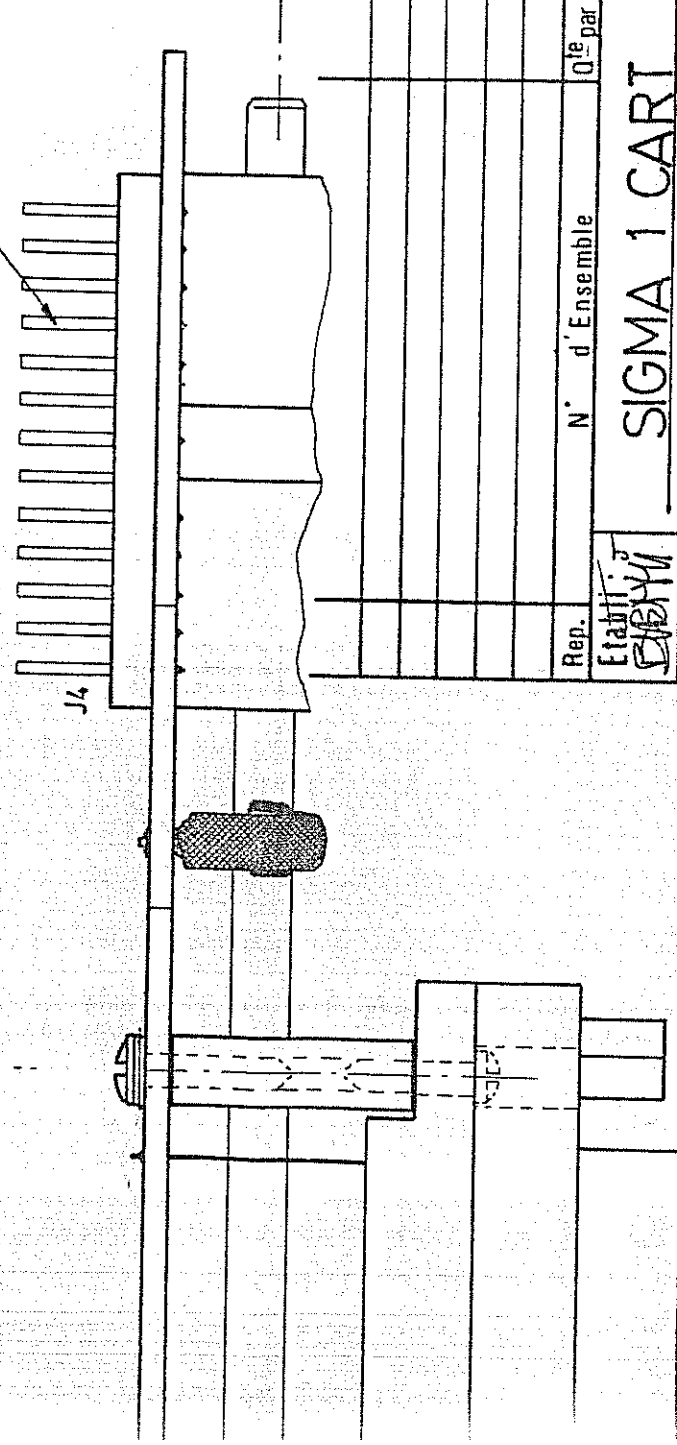
45mm

151

DELLE' NYLON (CI
COLLIER)



- Souder J3 et J4 après avoir enfilé un connecteur HE14 2x15pts (855456) avec ses contacts; pour les positionner correctement.



* POUR TEST AUTOMATIQUE

Rep.	N° d'Ensemble	Q'té par Ensemble	Matière	Protection
Etabli.	SIGMA 1 CART		Traitement	Poids
Date	PCA1 COMWOB		Tolérance Générale	Echelle
Vérifié.	863629			2/1
			KONTRON INSTRUMENTS	
			03-175c301	
			4	
			25.7	
			Date	

23/12/86.3B. 2A) DC N° 03-83-06 21/6/88 BM

150

J5

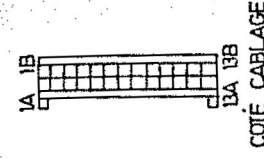
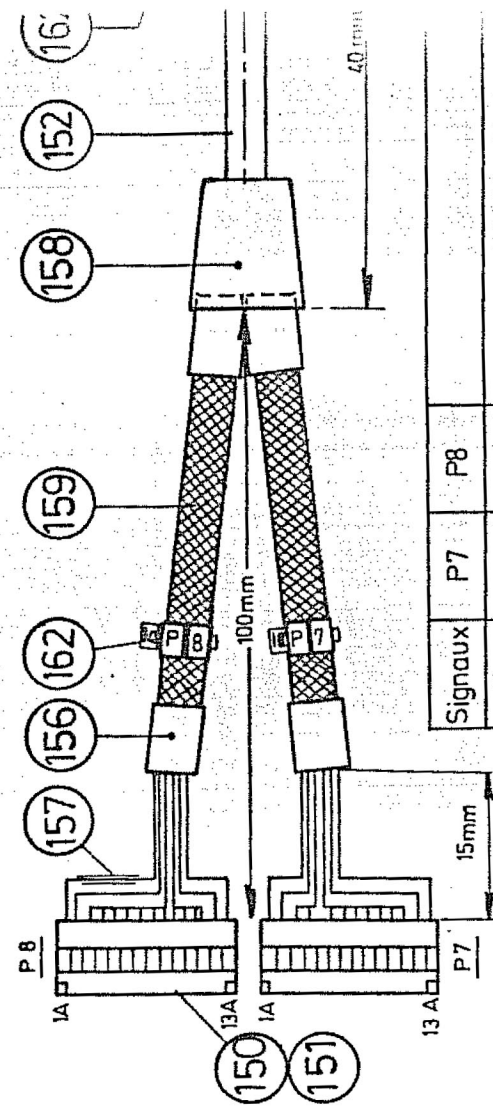
K1

J7

J8

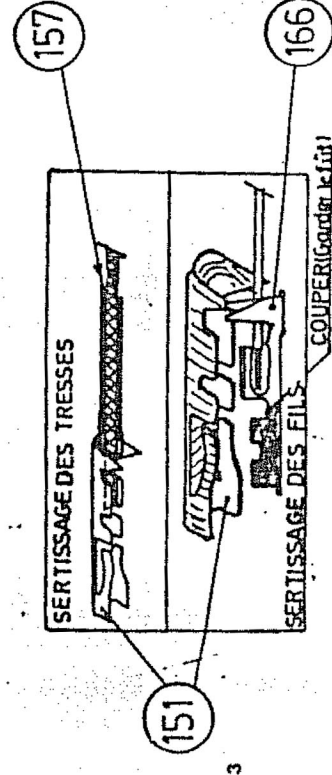
2

*



Répartir les tresses non utilisées
sur les points de P7
1A_1B_7A_13A_13B

Repartir les tresses non utilisées
sur les points de P8
1A_1B_7A_13A_13B_5A_6A_12A
25



— OUTILLAGE —

~~Pièce à saisir BERG HT 208A pour contact Rep~~
Pièce à saisir CONNECTRAL 8165097 (modifié) pour contact Rep

~~Machina à coudre CONJECTRAL pour contact Rep O~~

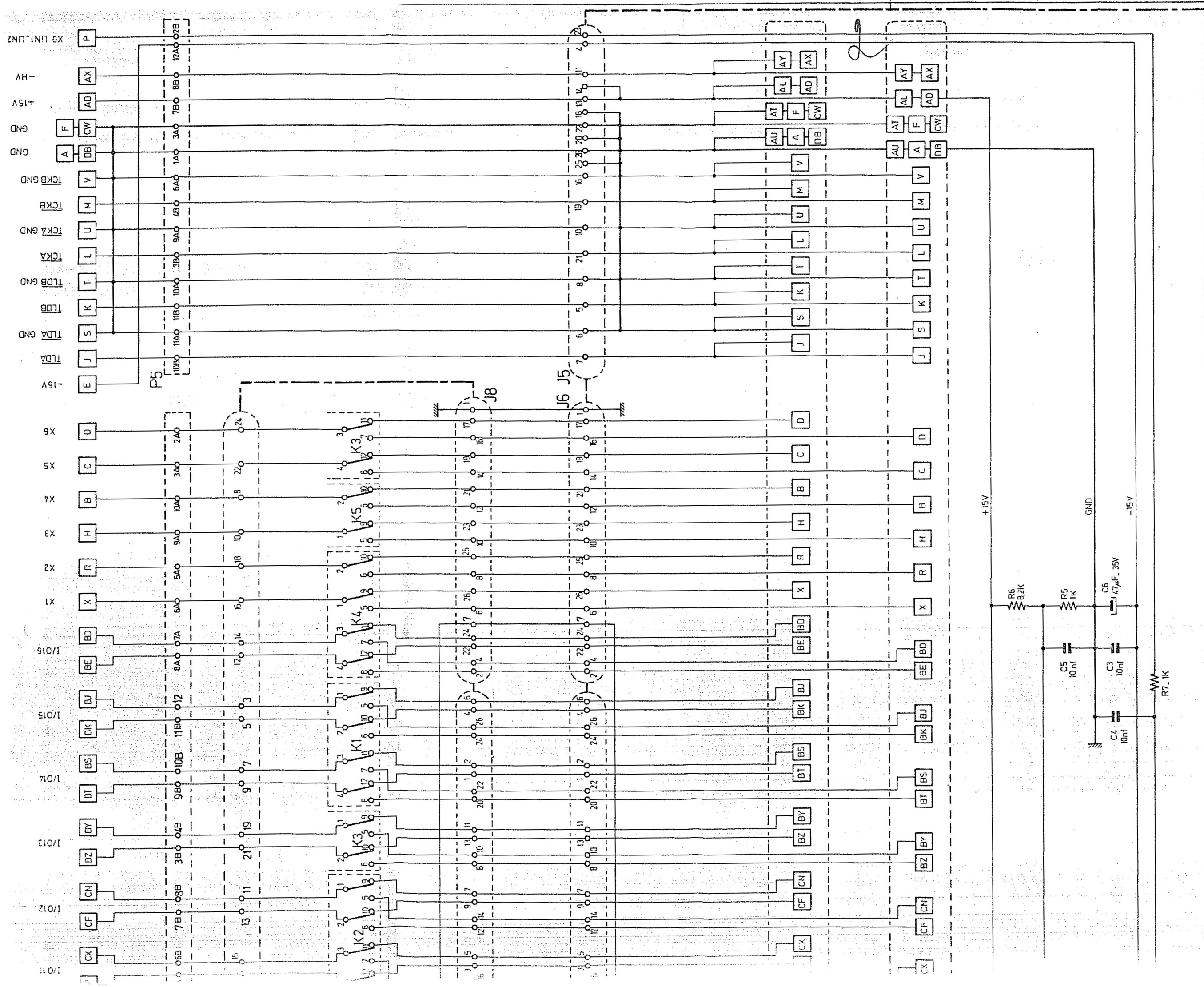
~~Pointon d'ame 816U539
Pointon isolant 816U540
Matrice d'ame 816U541
Matière isolant 816U542
Guide plaque 816U543~~

Pince à dénuder SES NONIK 581 001 type 010 (Pignée bleue pâle)

Machine à serrer BERG pour contact Rep. 366 Matrice n° 14-815 055-7

Rel: PV250 — Enclume rdt: 151
Pince à sortir CONNECTRAL pour douille HE13-HE14 Rep. 151

Ref.: 3005001



Etabli: *[Signature]*

Date: 22/01/86

Vérifié: *[Signature]*

SIGMA 1 CART

COMLIN

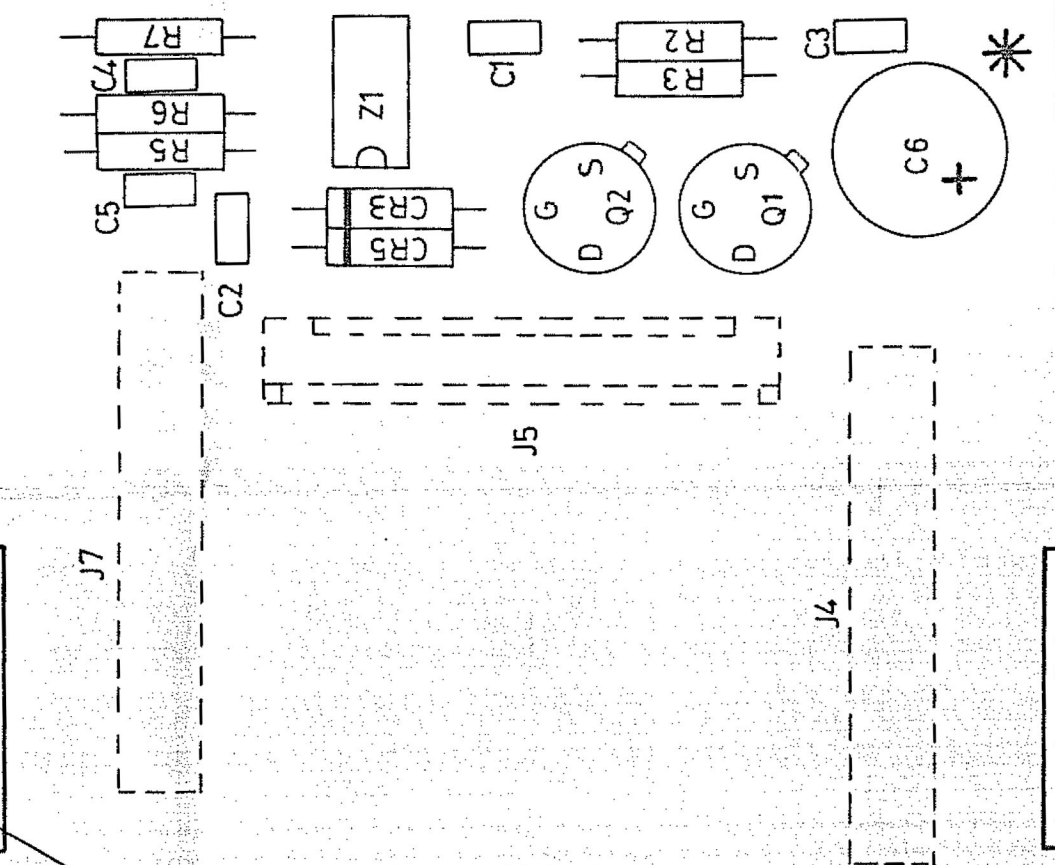

PCA1 863823 - PCA2 863858



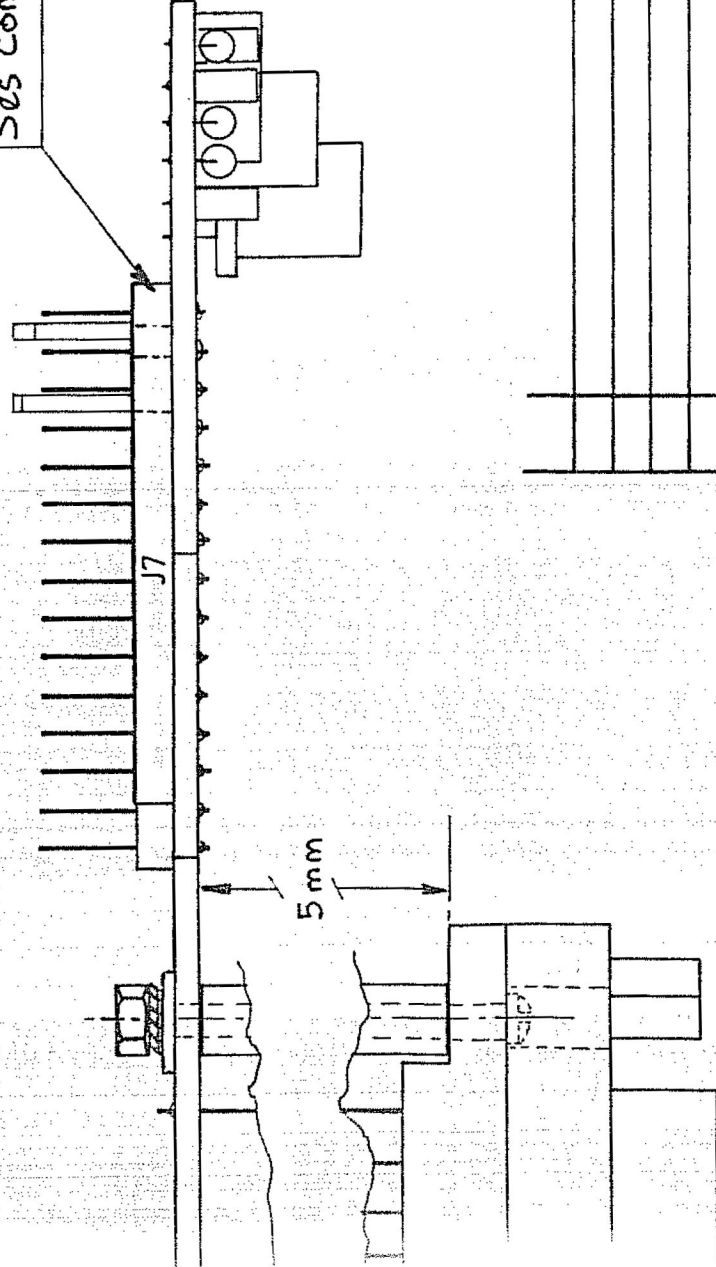
03.175C00.3

23.10 86

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite



- Soudar J3-J4-J6-J7 après avoir enfilé un Connecteur HE 14 2x13pts. (855456) avec Ses contacts; pour les positionner correctement.



* POUR TEST AUTOMATIQUE

[illegible]

1

2

3

4

150

*

CR1

K1

K2

J10

J9

K3

1

K4

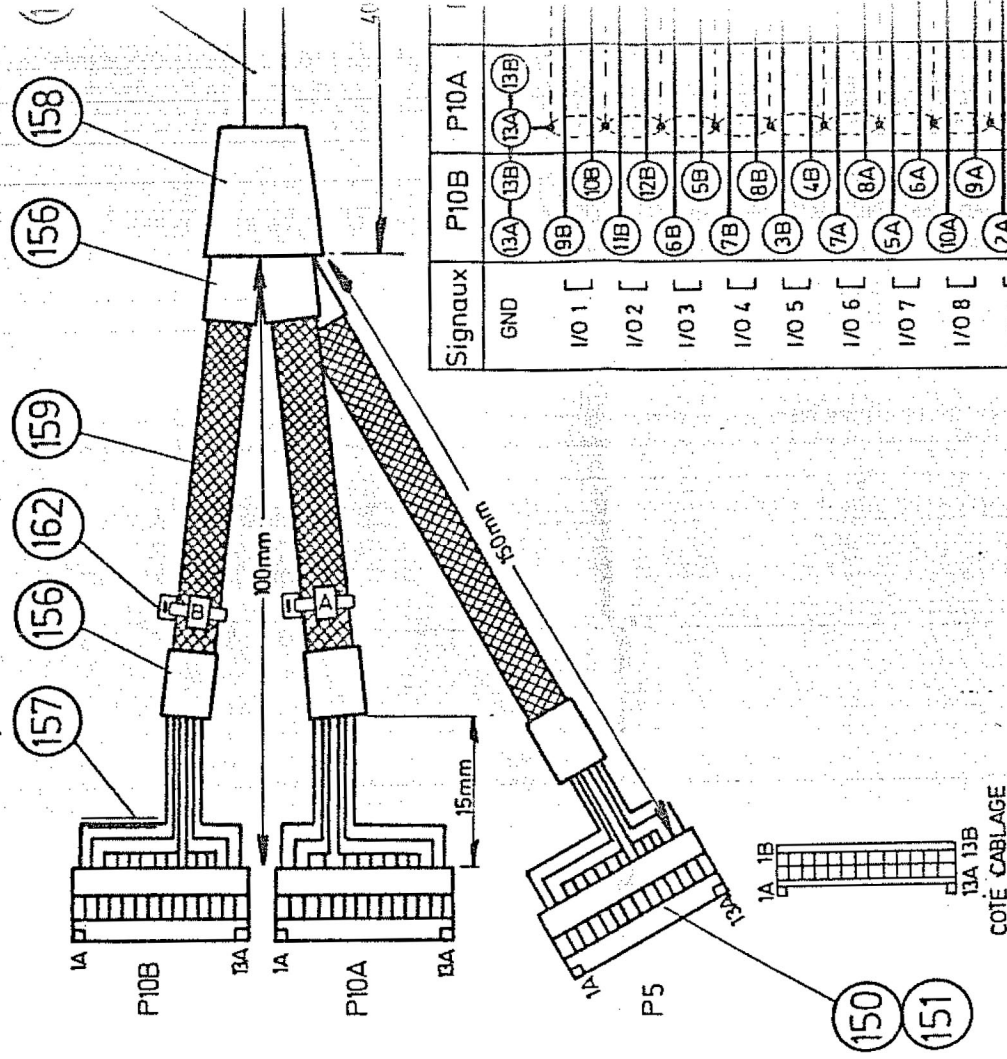
K5

8r

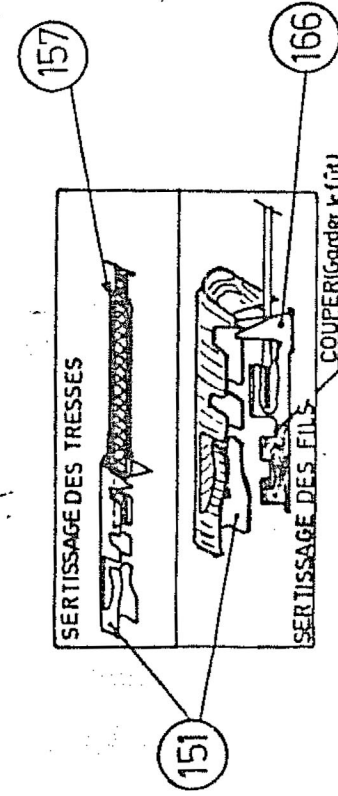
* POUR TEST AUTOMATIQUE

[illegible]

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite



CABLAGE DES FILS NON UTILISES				
P10B	P10A	P5	P.C.	FIL
2B	4A			MARRON B21
				BLEU B21
				MARRON B22
				GRIS B22
				JAUNE A3
				BLEU MARINE A14



— OUTILLAGE —

- Pince à sertir BERG-HF-200A pour contact Rep. 164

- Pince à sertir CONNECTRAL 816S097 (modifié) pour contact Rep. 164

- Machine à sertir CONNECTRAL pour contact Rep. 164

016C-H-9

Pince à dénuder SES NONIK 501011 type 010 (Poignée bleue p. 164)

Machine à sertir BERG pour contact Rep. 164

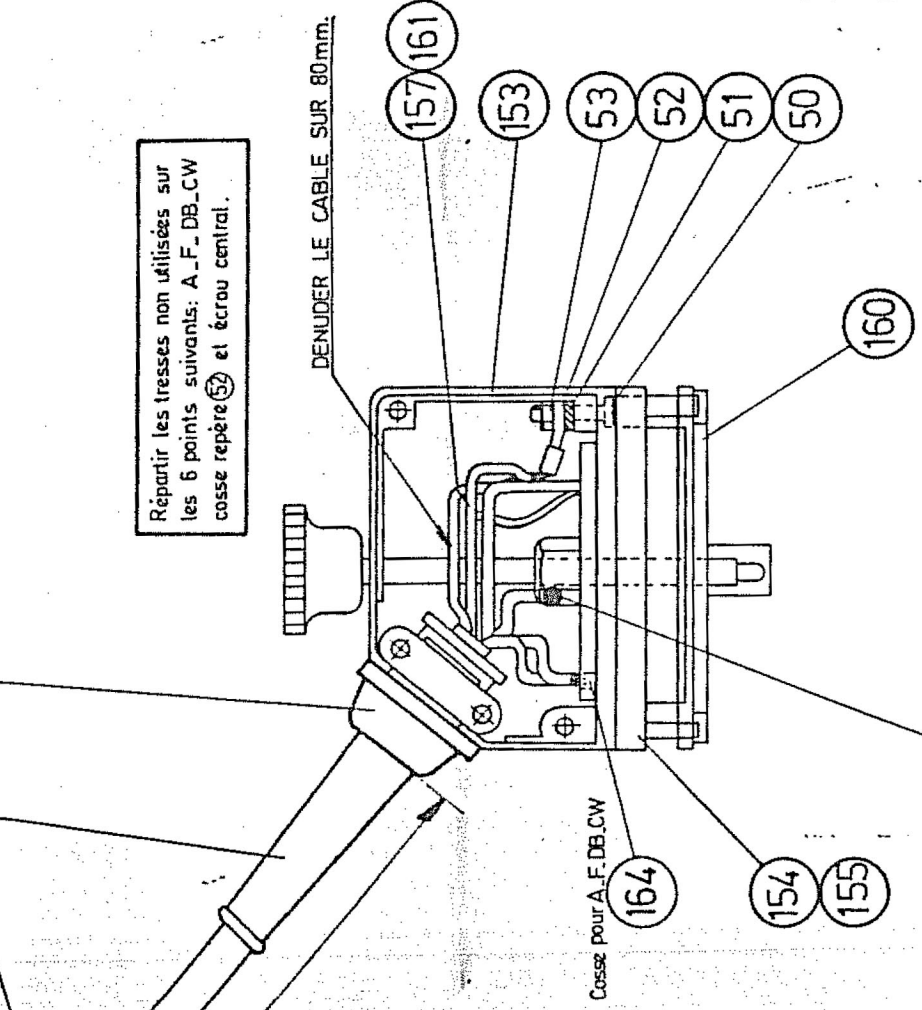
Pince à sertir CONNECTRAL pour douille HE13-HE14 Rep. 151

Réf. 300S001

Signaux	P10B	P10A
GND	13A 13B	13A 13B
I/O 1	9B	9B
I/O 2	11B	11B
I/O 3	6B	6B
I/O 4	7B	7B
I/O 5	3B	3B
I/O 6	7A	7A
I/O 7	5A	5A
I/O 8	10A	10A
I/O 9	2A	2A
I/O 10	11A	11A
I/O 11	5B	5B
I/O 12	7B	7B
I/O 13	3B	3B
I/O 14	9B	9B
I/O 15	11B	11B
I/O 16	8A	8A
X1	6A	6A
X2	9A	9A
X3	3A	3A
X4	10A	10A
X5	2A	2A
X6	1A	1A
GND	1A 1B	1A 1B
-15V		
TLDA		
TLDA GND		
TLDB		
TLDB GND		
TCKA		
TCKA GND		
TCKB		
TCKB GND		
GND		
+15V		
-HV		
XU		
(UNI.LIN2)		

1 - BLOQUER LE PASSE-FIL UNIQUEMENT SUR LA PARTIE CYLINDRIQUE DU MANCHON (CLÉS PLATES DE 27)

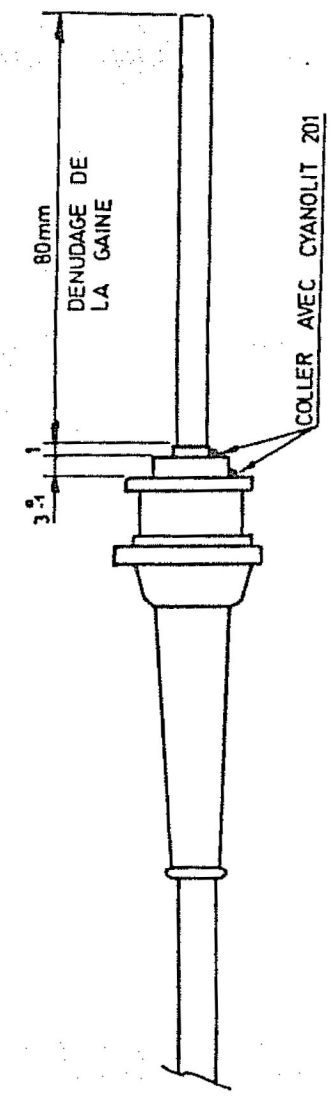
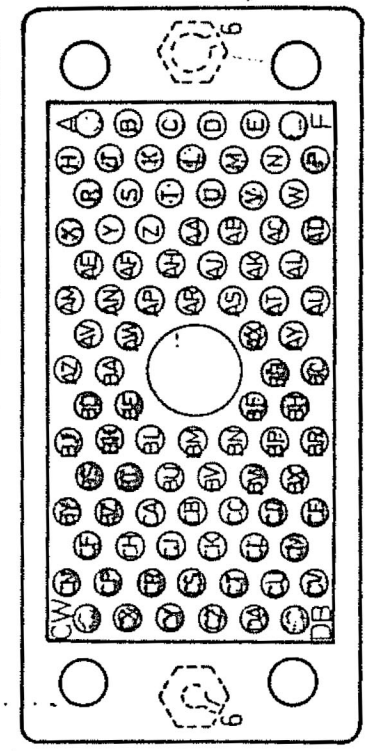
3 - Attention au pas de l'écrou



Répartir les tresses non utilisées sur les 6 points suivants: A-F, DB, CW cosse repère 52 et écrou central.

P.C.	FIL
A	- Tresse + isolant
BB	NOIR B1
BF	BLANC B11
BP	BLEU B11
BW	NOIR B2
CD	NOIR B12
CE	ROUGE B3
CM	NOIR B12
CL	ROUGE BLANC B3
CV	VERT B13
CU	NOIR B4
CT	MARRON B4
DA	BLANC B14
CS	MARRON B14
CZ	NOIR B5
CR	JAUNE B5
CY	BLANC B15
CP	GRIS B15
CF	NOIR B6
CN	BLEU B6
BY	ROUGE B6
BS	BLEU B16
BK	JAUNE B7
BE	VERT B7
X	MARRON B7
H	ORANGE B17
C	JAUNE B17
D	VERT B8
F	ROUGE B8
E	VERT B18
S	JAUNE A6
T	ROUGE A10
U	VERT A7
V	VIOLET A8
DB	GRIS A9
AD	BLANC A1
P	- Tresse + isolant
J	- ROSE A11
K	GRIS B10
L	ROUGE B20
M	GRIS B9
DB	JAUNE B19
CW	- TRESSES + ISOLANT
AX	BLEU A13
P	BLEU CLAIR A12
P	BLEU A2

SOUDE SUR LE 6 PANS
A - Dépolir à la lime fine
B - Déposer du décapant CASTOLIN 157A
C - Utiliser un fer à souder 150 W
D - Étamer
E - Éliminer le décapant avec coton tige + alcool
F - Souder le fil de masse
G - Nettoyer avec coton tige + alcool.



Rep.	N° d'Ensemble	Unité par Ensemble	Matériau	Protection
Établi			Traitement	Poids
Date			Tolérance Générale	Echelle
Vérifié				
SIGMA 1 CART				
CABLE CAPTEUR				
COMLIN 864161				
KONTRON INSTRUMENTS				
03/175 D007				
1				
23-87				
Date				

Table of Contents

SIGMA 1

COPYRIGHT KONTRON

All rights reserved. The information contained in this publication may not be used for any purpose other than that for which it was originally supplied. The publication may not be reproduced in part or in whole without written consent of Kontron. In order to maintain and improve standards of manufacturing, methods of functioning and to increase reliability, Kontron equipments are periodically reviewed. For this reason, the contents of this publication are subject to change without notice.

The equipment described is designed and manufactured by KONTRON S.A. (Montigny Le Bretonneux, France), a member of the Kontron group of companies.

QUALITY, RELIABILITY AND SAFETY.

This equipment has been designed with an emphasis on quality, reliability and safety, but Kontron can only accept responsibility for these aspects providing the following conditions are met :

- a) Electrical installations of the room or building in which the equipment is to be used must comply with regulations specified by the country in which the equipment is to be used.
- b) The equipment is used in accordance with the instructions for use provided by kontron(Operating manual).
- c) All modifications and repairs to the equipment are carried out by authorized Kontron personnel, their agents or authorized hospital technicians.

Your local Kontron company or agent is :

(To be entered by local Kontron company or agent.)

1. TABLE OF CONTENTS

1. TABLE OF CONTENTS	1
2. INTRODUCTION AND TECHNICAL SPECIFICATIONS	5
2.1. INTRODUCTION	5
2.2. CAUTION AND WARNINGS	5
2.3. CLEANING AND STERILISATION	6
2.4. TECHNICAL SPECIFICATIONS	7
3. THEORY OF OPERATION	13
3.1. BLOCK DIAGRAM	14
3.2. MAIN CLOCK AND SIGNALS CONTROL	17
3.4. SCON p.c.b.	18
3.5. MEMEX p.c.b.	24
3.6. PERIP p.c.b.	28
3.7. FIST p.c.b.	32
3.8. CARDIS p.c.b.	38
3.9. WOMOT p.c.b.	44
3.10. IFDOD p.c.b.	48
3.11. MEFRO p.c.b.	52
3.12. SISEND p.c.b.	56
3.13. TFOC p.c.b.	64
3.14. CABLING	68
3.15. VIDEO KIT	69
3.16. POWER SUPPLY	69
3.17. E.C.G. MODUL	69

4. ADJUSTMENT AND CALIBRATION (UNIT OPEN)	71
4.1. INTRODUCTION	71
4.2. CALIBRATION EQUIPMENT	72
4.3. TV MONITOR p.c.b.	82
5. SAFETY AND PERFORMANCE CHECKS (UNIT CLOSED)	91
5.1. TEST OF CLOSED MACHINE	91
5.2. SAFETY TEST	97
6. ASSEMBLY AND DISASSEMBLY	101
6.1. CMOS COMPONENTS	101
6.2. EXPLODED VIEW	101
7. FAULT FINDING AND STANDARD EXCHANGE	103
8. PARTS LIST	105
8.1. RECOMMENDED SPARE PARTS LIST	105
8.2. COMPLETE SPARE PARTS LIST	106
9. E.S.I.	
10. SCHEMATICS	
11. APPENDIX	



Introduction and Technical Specifications

2. INTRODUCTION TECHNICAL SPECIFICATIONS

2.1. Introduction

The service manual contains the necessary documentation for the servicing and repair of the SIGMA 1. It is assumed that readers are familiar with the operating manual inserted in chapter 0 of this document.

2.2. Cautions and warnings

NOTE: Maintenance may only be carried out by qualified service personnel.

The SIGMA 1 has CMOS parts. During maintenance it is essential to prevent transfer of static electrical charges to circuit boards and components by :

- grounding instrument
- grounding soldering iron
- wearing grounded wrist strap (via 1 MOhm to ground)
- adopting identical precaution for all CMOS spare components.

It is imperative to keep surface of the floating part of the E.C.G. p.b.c. between components and unit chassis insulated and absolutely clean.

The following general rules should be answered when operating or servicing SIGMA 1 :

- *The equipment must not be used in the presence of flammable anaesthetics.*
- *Operation of equipment in an environment with increased oxygen concentration is inadvisable.*

If the unit is opened it is imperative to perform all safety and functional checks described in chapter 5 of this manual after reassembly, to ensure that functional safety demands are met.

Functional checks after repair is required but not safety check, unless the power supply module, mains cabling, or the E.C.G. amplifier was repaired.

2.3. Cleaning and sterilization

2.3.1. CLEANING

Clean the surface of the Sigma 1 with a dry cloth. If more extensive cleaning is required, switch off the instrument and disconnect the power cord. Use a slightly dampened soft cloth and very mild detergent solution to clean exterior surfaces. Never use abrasive cleansers or steel wool, or extreme electrical disturbance may result.

With the Sigma 1 powered off, clean the transducer with a very mild detergent solution and a slightly dampened cloth.

If more extensive cleaning is required, contact your Service Support Representatives. Never remove the protective covers of the Kontron instrument. There are hazardous voltage levels inside.

2.3.2. STERILIZATION

Do not pressurize. Sterelize using non denatured alcohol and soft cloth. Never immerse the transducer in any liquid.

Sterilization may be carried out with paraformaldhehyde (polyoxymethylene) in tablets, at ambient temperature.

2.4. Technical specifications

2.4.1. COMMON SPECIFICATIONS FOR SECTOR AND LINEAR SCANNING

a) Image format

There are many different formats. They are shown in the enclosed table, which shows the individual combinations of imaging angles, depth, line density and frame rate. Note that it always takes an integer number of TV-frames to make one ultrasound image.

b) Ultrasound center frequency

Nominal frequencies : 3.5MHz, 5MHz.

Actual frequencies : very large band signal processing.

In the near range frequencies up to 9MHz are used with 3.5MHz sector transducer.

c) scale factor

On the built-in monitor, the image is always about 75 mm high. This results in the following scale factors :

imaging depth (cm)	scale factor (approximately)
6	1,25
8	0,9
10	0,75
13	0,6
18	0,4
23	0,3

Imaging depths between 8 and 23cm can be selected with 3.5MHz transducer. 5MHz and 7.5MHz transducers can be operated between 6 and 18 cm depth setting, although some among them may be useless because of limited acoustic penetration.

d) Gain

There are separate overall gain sliders for 2D image and for TM image (60 dB range).

The imaging depth is divided into 9 zones with 80 dB range in the first zone and 60dB range in the remaining zones.

e) Dynamic range

The dynamic range which is displayed on the screen can be controlled by the REJECT slider in the range from 25 dB to 60 dB.

f) Gamma-curve

The user can select from 4 different postprocessing curves. He can use normal video or inverse video.

g) Enhance

The user can select from 7 different types of enhancement (including "off").

Note : Gamma-curve and enhance functions are independently selectable for 2D and for TM

h) Filtering

The user can choose from 4 different filter functions trading signal to noise ratio and grey-scale against rendition of moving objects.

i) Scan converter features

The scan converter can display :

- 2D formats listed in a).
- Double 2D format. Each of the two images can be independently acquired using any of the formats available in the instrument. (Mixing of linear and sector images is also possible).
- Composite double 2D format in the case of linear scanning for displaying large objects.
- All formats combined with time motion.
(image is refreshed after one screen of TM).
- Full screen time motion mode at 10, 20 and 50 mm/sec.
- ECG trace on screen.
- ECG triggered image.
- Double ECG triggered image.
- Ciné mode for storing an image sequence.

j) Magnifier

The user can select a part of the image by the trackball and display it with a magnification factor of 2. This works with either real-time or frozen images.

k) Markers

There are cm-markers on the left side and on top of the image (respectively time markers in TM).

The position of the TM line is marked by a dotted line.

l) Alphanumerics on screen

- There is a full alphanumeric keyboard.
- There is a special field for the name of the patient.
- The user can write everywhere on the screen.
- He can move the cursor using the space/line feed keys, or using the trackball.
- The user can store a short text in the permanent memory and recall it with a keystroke.
- There is a technical data field which can be switched ON and OFF. It can display frequency, depth, near/far, high resolution/survey.
- There are four softkey fields at the bottom of the image, where the softkey functions are shown. The following features use the soft keys : Enhance, Filter, TM-speed, SET, ECG-sync, CALC.
- There is a symbol showing left-right inversion, freeze and magnification.

m) Grey scale

On the left side of the screen, there is a grey scale test pattern with 16 shades of grey.

n) Scan converter resolution

The visible portion of the screen has a resolution of 380 pixels horizontal and 512 pixels vertical with a resolution of 6 bits (60 shades of grey).

The graphics and alphanumerics display has a resolution of 380 x 256 pixels.

o) Set functions

There are 4 set functions :

- Program sound velocity used for measurements and display.
- Set clock circuit.
- Store short text into permanent memory.
- Store desired power up - state of machine (e.g. enhance and filter functions) into permanent memory.

p) Set state of machine

For linear and sector mode, there are 10 predefined machine states available in the permanent memory. They are activated by SET n where n is a number between 0 and 9. Four states are permanently set by the factory. Six states are user programmable.

q) Panic function

If the user is lost when manipulating signal processing modes, he can press SET I in order to return to the power-up state.

r) Measurements

Distance, circumference and area (in 2D).

Distance, time and slope (in TM).

Markers are moved by the trackball.

Double distance in 2D.

Two independent distances in double 2D.

s) Calculations

Built-in biometry functions are :

- for 0B/GYN : BPD, THD, ABD, FML, CRL, GES, HIP A, B.
- for cardiology : on TM → Distance ratio
Ventricular volume (Teichholz).
on 2D → Volume calculation
(SIMPSON or HEMI-ELLIPSOID).
- For internal medicine : RUV
In double 2D format, two independent calculations can be done, one on each image.
- User programmable : six functions based on distance, area or circumference input delivering a single output value of arbitrary dimension.

t) Clock

There is a permanent clock in the machine displaying the date.

u) Power consumption

Approximatively 200 W typical.

2.4.2. SECTORIAL PART PERFORMANCE

a) Image formats (50Hz line frequency)

SIGMA 1

FORMATS AND SCAN RATES - WOBBLER SCANHEADS (1)

Depth	3.5 MHz A						3.5 MHz C					
	HR			S			HR			S		
80	60	16 2/3	161	80	16 2/3	161	60	16 2/3	161	60	25	109
	90	12 1/2	203	80	16 2/3	167	80	12 1/2	209	80	16 2/3	167
	105	8 1/3	255	90	12 1/2	203	90	12 1/2	203	90	16 2/3	163
100	60	16 2/3	161	60	16 2/3	161	60	16 2/3	161	60	25	109
	90	12 1/2	203	80	16 2/3	167	80	12 1/2	209	80	16 2/3	167
	105	8 1/3	255	90	12 1/2	203	90	12 1/2	203	90	16 2/3	163
130	60	12 1/2	161	60	16 2/3	129	60	16 2/3	129	60	25	85
	90	12 1/2	163	80	16 2/3	127	80	12 1/2	167	80	16 2/3	127
	105	8 1/3	255	90	12 1/2	163	90	12 1/2	163	90	16 2/3	137
180	60	12 1/2	129	60	16 2/3	109	60	12 1/2	129	60	16 2/3	109
	90	10	163	80	12 1/2	127	80	12 1/2	127	80	16 2/3	107
	105	8 1/3	255	90	12 1/2	137	90	12 1/2	137	90	16 2/3	117
230	60	10	129	60	12 1/2	109	60	12 1/2	109	60	16 2/3	85
	90	8 1/3	163	80	12 1/2	107	80	10	127	80	12 1/2	107
	105	7	211	90	12 1/2	137	90	12 1/2	137	90	12 1/2	137

60 16 2/3 161
 angle frame rate number of lines

SIGMA 1

FORMATS AND SCAN RATES - WOBBLER SCANHEADS (2)

Depth	5.0 MHz B / 7.5 MHz B						5.0 MHz C					
	HR			S			HR			S		
60	60	16 2/3	161	60	16 2/3	161	60	16 2/3	161	60	25	109
	90	12 1/2	203	80	16 2/3	167	80	12 1/2	209	80	16 2/3	167
	105	8 1/3	255	90	12 1/2	203	90	12 1/2	203	90	16 2/3	163
80	60	16 2/3	161	60	16 2/3	161	60	16 2/3	161	60	25	109
	90	12 1/2	203	80	16 2/3	167	80	12 1/2	209	80	16 2/3	167
	105	8 1/3	255	90	12 1/2	203	90	12 1/2	203	90	16 2/3	163
100	60	16 2/3	161	60	16 2/3	161	60	16 2/3	161	60	25	109
	90	12 1/2	203	80	16 2/3	167	80	12 1/2	209	80	16 2/3	167
	105	8 1/3	255	90	12 1/2	203	90	12 1/2	203	90	16 2/3	163
130	60	12 1/2	161	60	16 2/3	129	60	16 2/3	129	60	25	85
	90	12 1/2	163	80	16 2/3	127	80	12 1/2	167	80	16 2/3	127
	105	8 1/3	255	90	12 1/2	163	90	12 1/2	163	90	16 2/3	137
180	60	12 1/2	129	60	16 2/3	109	60	12 1/2	129	60	16 2/3	109
	90	10	163	80	12 1/2	127	80	12 1/2	127	80	16 2/3	107
	105	8 1/3	255	90	12 1/2	137	90	12 1/2	137	90	16 2/3	117

60 16 2/3 161
 angle frame rate number of lines

b) Focussing

Static focus. A choice of different transducers is available with optimized focal distances for different applications.

2.4.3. LINEAR PART PERFORMANCE

a) Image formats

SIGMA 1

FORMATS AND SCAN RATES - ULAP TRANSDUCERS

Frame rate			Number of acoustical beams							
Depth	Scanhead									
	3.5 MHz Lin		5.0 MHz Lin		7.5 MHz Lin		3.5 MHz Cur1		5.0 MHz Cur1	
60 S			25	166	25	170			25	170
HR			16 2/3	249	16 2/3	255			16 2/3	255
80 S	16 2/3	196	25	166	25	170	25	170	25	170
HR	16 2/3	196	16 2/3	249	16 2/3	255	16 2/3	255	16 2/3	255
100 S	16 2/3	196	25	166	25	170	25	170	25	170
HR	16 2/3	196	16 2/3	249	16 2/3	255	16 2/3	255	16 2/3	255
130 S	16 2/3	196	16 2/3	166	16 2/3	170	16 2/3	170	16 2/3	170
HR	16 2/3	196	16 2/3	249	12 1/2	255	12 1/2	255	12 1/2	255
160 S	12 1/2	196	16 2/3	166	16 2/3	170	16 2/3	170	16 2/3	170
HR	12 1/2	196	10	249	10	255	10	255	10	255
230 S	12 1/2	196					12 1/2	170		
HR	12 1/2	196					8 1/3	255		
Nr. Seg.	108		93		96		96		96	
Scan-W.	107 mm		66 mm		51 mm		67 mm *		51 mm *	

* at skinlevel 48.4°

b) Focussing

Dynamic focus with 6 different focal zones at reception.
Near/Far focus selectable at transmission.

2.4.4. OPERATING PARAMETERS

- . Power source : 110V range : 90 ... 132 V_{eff}
220V range : 180 ... 264 V_{eff}
- . Temperature : 0 to 40°C
- . Humidity :
- . Warm-up time : 1 minute
- . Inputs and outputs : 1V_{pp} into 75
- . Video output to recorder : Z = 75
- . Video output to ext. monitor : 1V_{pp} into 75
- . Input for ECG electrodes (same as MICROMON)
- . 25 pole D-Connector for TM recorder and Doppler (specs of TM-output, see description of CARDIS board)
- . 25 pole D-Connector for optional serial interface
- . 37 pole D-Connector for optional parallel interface



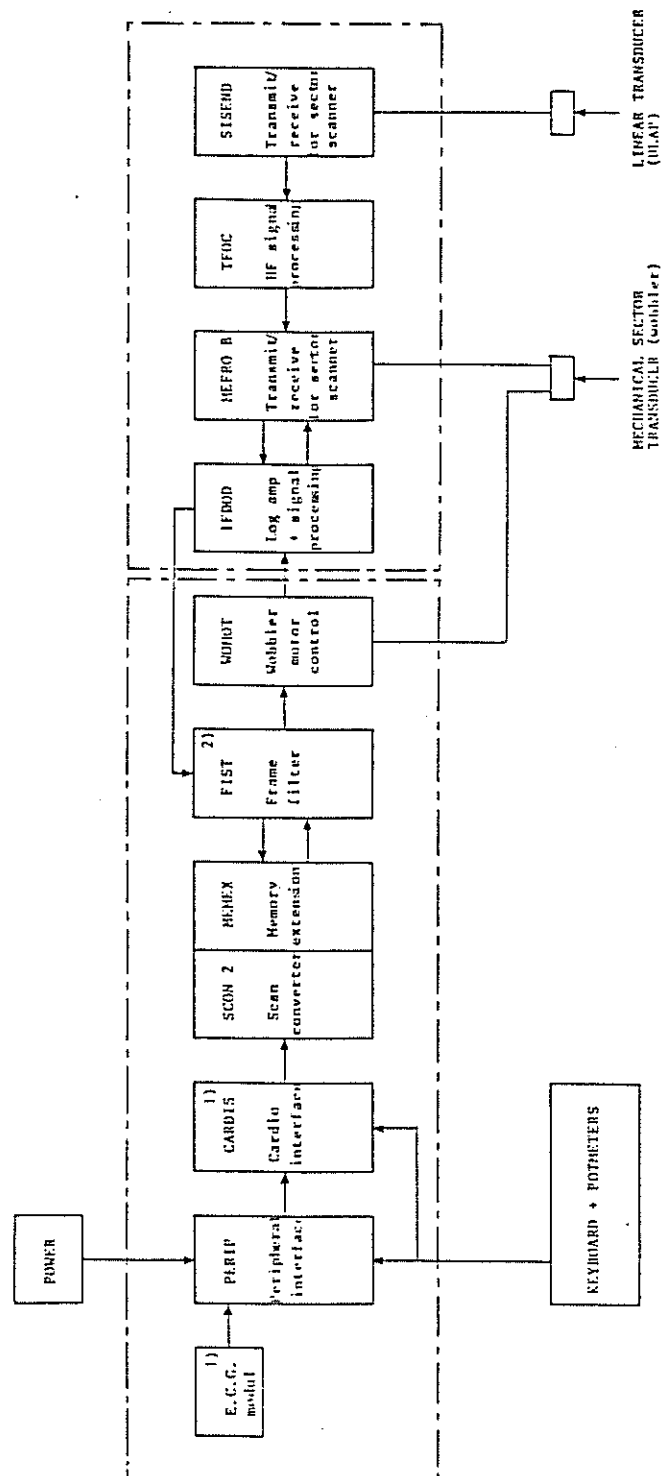
Functional Description

3

3. THEORY OF OPERATION

3.1. Block diagrams

3.1.1. OVERALL BLOCK DIAGRAM



3.1.2. INTRODUCTION

SIGMA 1 is an ultrasound continued linear sector scanner for diagnostics in abdominal, obstetric and gynaecology applications.

Some of the boards from Sigma 1 SC had to be redesigned:

SCON 2 : A new Memory - Management. Unit was installed to receive more ROM-space for one microprocessor.

MEFROB : A new transmitter circuit was designed.

FIST : FIST was already prepared for nonlinear recursive filters. In Sigma I these filters are used, therefore FIST has to be manufactured with faster RAM's (120 ns selection) and two additional PROMs.

One board is completely new :

SISEND : This board contains the linear transmitter and receiver and is familiar to the ULAP – Board "SEND".
The differences are :

- New transmit - pattern logic,
- New hybrides,
- Low power dissipation.

One board is taken from ULAP:

TFOC

The other boards are taken from Sigma 1 SC:

PERIP
CARDIS
MEMEX
WOMOT
IFDOD

3.1.3. DESCRIPTION OF OVERALL BLOCK DIAGRAM

The SIGMA 1 was conceived aiming at low cost and modularity. SIGMA 1 was designed using the latest electronic circuit technology. It is highly modular and completely microprocessor controlled. Therefore, the system has a very good cost-performance ratio.

The heart of SIGMA 1 is the scan converter, which is built on just two boards. It converts the incoming ultrasound echo information from any scanning format into a standard television format. It includes two overlay memories and such features as magnifier and time motion on screen even combined with a 2D-image. It includes two 8 bit microprocessor systems, one for real time control functions and the other for keyboard and overlay memory management. The compact design of the Scan converter was only possible by the application of "Gate Array" technology. Two semicustom integrated circuits were developed, each representing the functional equivalent of about 80 standard IC-packages. This offers important advantages in space, power consumption, reliability and production cost.

The basic building block of the analog sectorial part of SIGMA 1 is the IFDOD board. On it, there are the largest signal processing circuits like dynamic filters, logarithmic amplifier, dynamic range control and various "enhance" functions.

To that, we must add the motor control board (WOMOT) and the Transmit/Receive board (MEFRO) in order to get a mechanical sector scanner.

The basic building block of the analog linear part is the SISEND board which generates the optimized signals to drive the linear transducer elements for transmission and connects the signal of the required phase onto I/O lines to the ODD and EVEN boards in the transducer. It provides the initial amplification and phase selection of the received signals for transmission to the TFOC board.

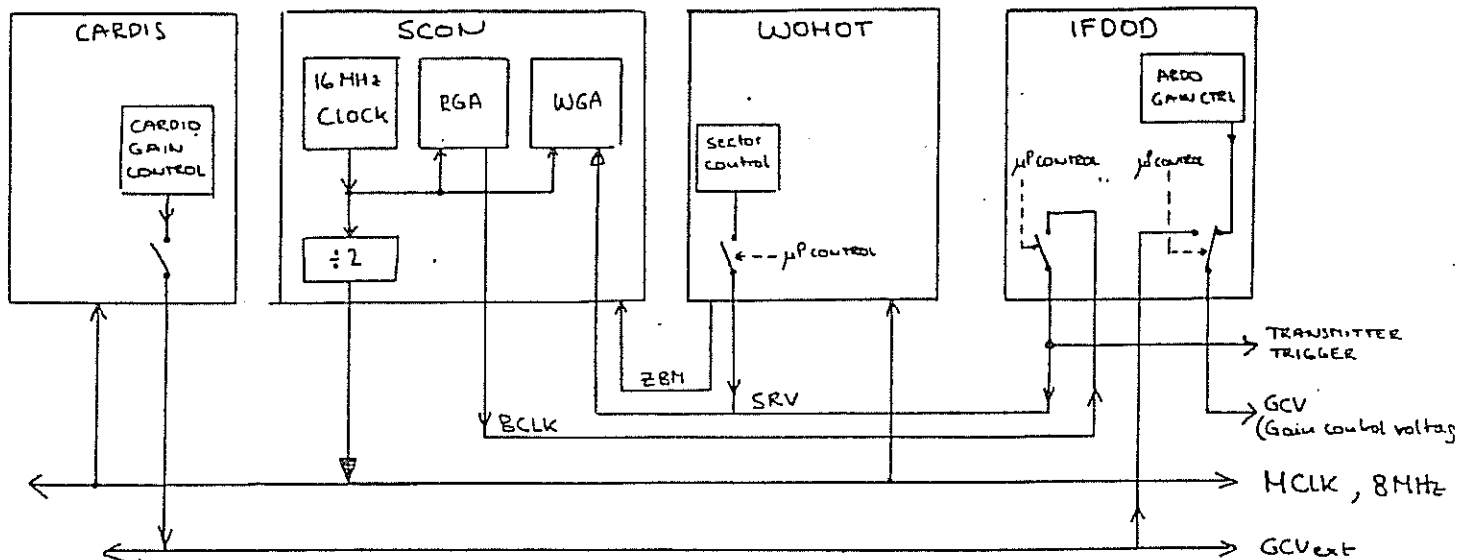
The FOC board processes the received signals for apodization and focus.

The image quality of the scanner has been further improved by adding the frame filter board (FIST).

The gain control voltage is generated on the CARDIS board. On the same board, there are the circuits required for cardiology features : the interface to the ECG amplifier module and the TM recorder output..

3.2. Main clock and signals control

3.2.1. MAIN CLOCK AND SIGNALS CONTROL BLOCK DIAGRAM



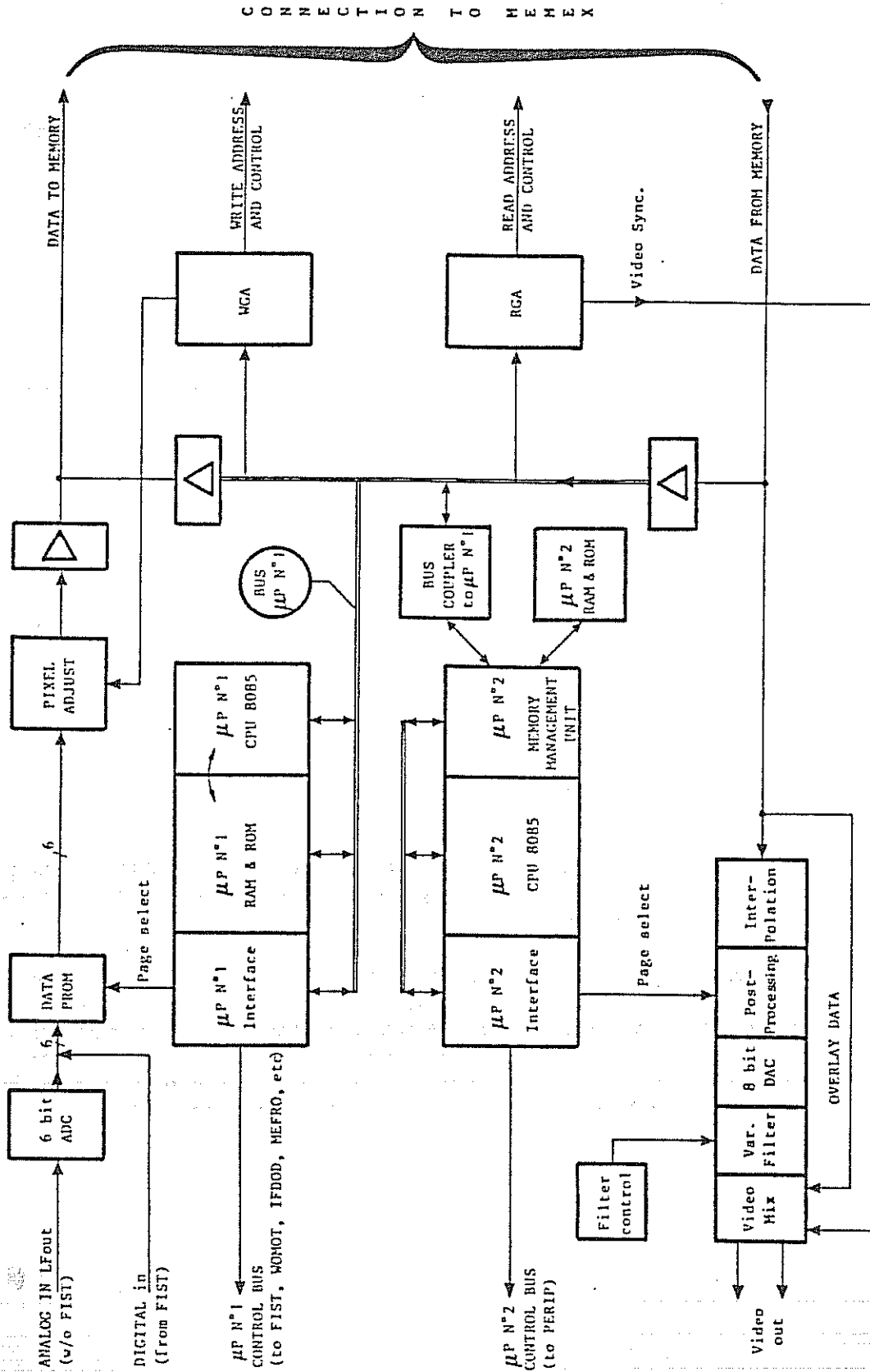
3.2.2. DESCRIPTION OF MAIN CLOCK AND SIGNALS CONTROL BLOCK DIAGRAM

The whole system is driven by a 16 MHz master clock on SCON. For the bus the clock is divided by two. The resulting 8 MHz clock is called MCLK and is used by most boards as a time base.

The scan of an image is defined by two signals, which in case of a sector scan are produced by WOMOT: The ZBM signal is active during the whole image. The SRV signal triggers the individual transmit-pulses, based on the actual position of the mechanical scanhead. In case of TM or electronic linear scanning ZBM is not needed anymore. WOMOT is disconnected from the bus and SRV is driven by a pulse called BCLK (coming from RGA on SCON). The gain control voltage is delivered by the CARDIS board through the GCVext line.

3.4. Scon p.b.c.

3.4.1. SCON BLOCK DIAGRAM



3.4.2. DESCRIPTION OF SCON 2

a) SCON-Scan converter

The SCON2 board together with the MEMEX board is a complete controller/scan converter. There are two microprocessors : one for real time control of the scanning and the other for keyboard and overlay memory management. Video synchronization and the read and write addresses of the image memory are generated by two "Gate Arrays" (semicustom integrated circuits). Each of them represents an entire board of TTL-logic!

At the signal input, there is a 6 bit flash A/D converter which is not inserted : it is only required, if there is no FIST board in the system. Else, the digital output of FIST is used directly. Then, the signal goes through the "Data PROM", which serves as multiplexer for image initialization and as look-up table in order to do some processing in TM-mode. Subsequently, it is fed into the image memory on MEMEX. The output from the image memory goes to the interpolation stage. It detects not valid pixels. Then, the signal goes through the "Postprocessing PROM", where different gamma-curves are stored (including video inversion). The PROM output has 8 bit-resolution and is converted by a 8 bit digital to analog converter. The resulting analog signal is smoothed by an analog filter, which improves the interpolation performance and the appearance of magnified images. Then, the signal is mixed with video SYNC signals and overlay, and blanking information is added. Finally, there are two 75 Ohm output stages.

b) Microprocessor N°1

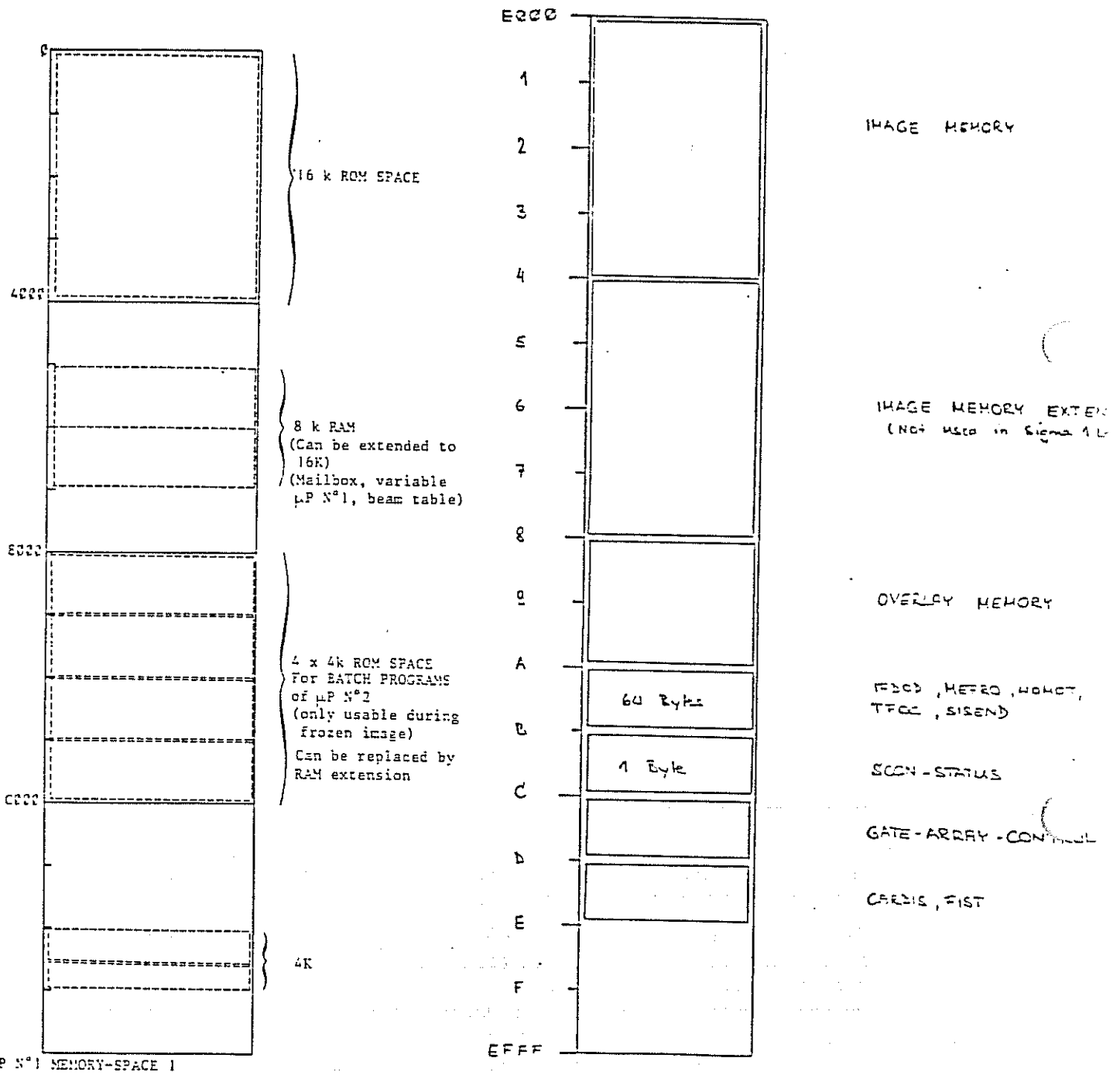
This is a 8085 based microprocessor dedicated to all real time control tasks and some image initialization tasks. For instance, before scanning it must fill the zone of a sector image by the "not valid" code in order to enable the interpolator to detect pixels, which were not written by the scanning.

The processor has a bus connection to the Analog Part and the Frame Filter. The address-space organization of this connection is given in *Table 1* (following page). The organization of the whole address space is shown in table SCON.MEMORY SPACE 2, but because address decoders are PALs, this may change during software development. The processor controls the "Read Gate Array" and the "Write Gate Array".

The restart inputs are used for synchronizing to the television retrace RTR (RST 6.5), to the Send/Receive clock SRV (RST 7.5) and to the frame start/stop of the mechanical scanhead ZBM (RST 5.5).

The microprocessor N°1 gets its basic information from the microprocessor N°2, which can put the microprocessor N°1 into the HOLD state and overtake its bus. The microprocessor N°2 does so usually during the vertical television retrace, on condition that microprocessor N°1 is not scanning an image. This overtake requires some handshakes between microprocessor N°1 and microprocessor N°2. The microprocessor N°1 gets the RTR interrupt, prepares the microprocessor N°2 bus access and interrupts microprocessor N°2 by setting the SOD output to a high level. Microprocessor N°2 gets that signal on RST 5.5 and overtakes the bus of microprocessor N°1 until the end of the retrace is given by a RST 7.5 on microprocessor N°2. Part of the RAM space of microprocessor N°1 is used as a mailbox (PATCH-PROM), in order to exchange information between microprocessor N°2 and microprocessor N°1.

TABLE 1

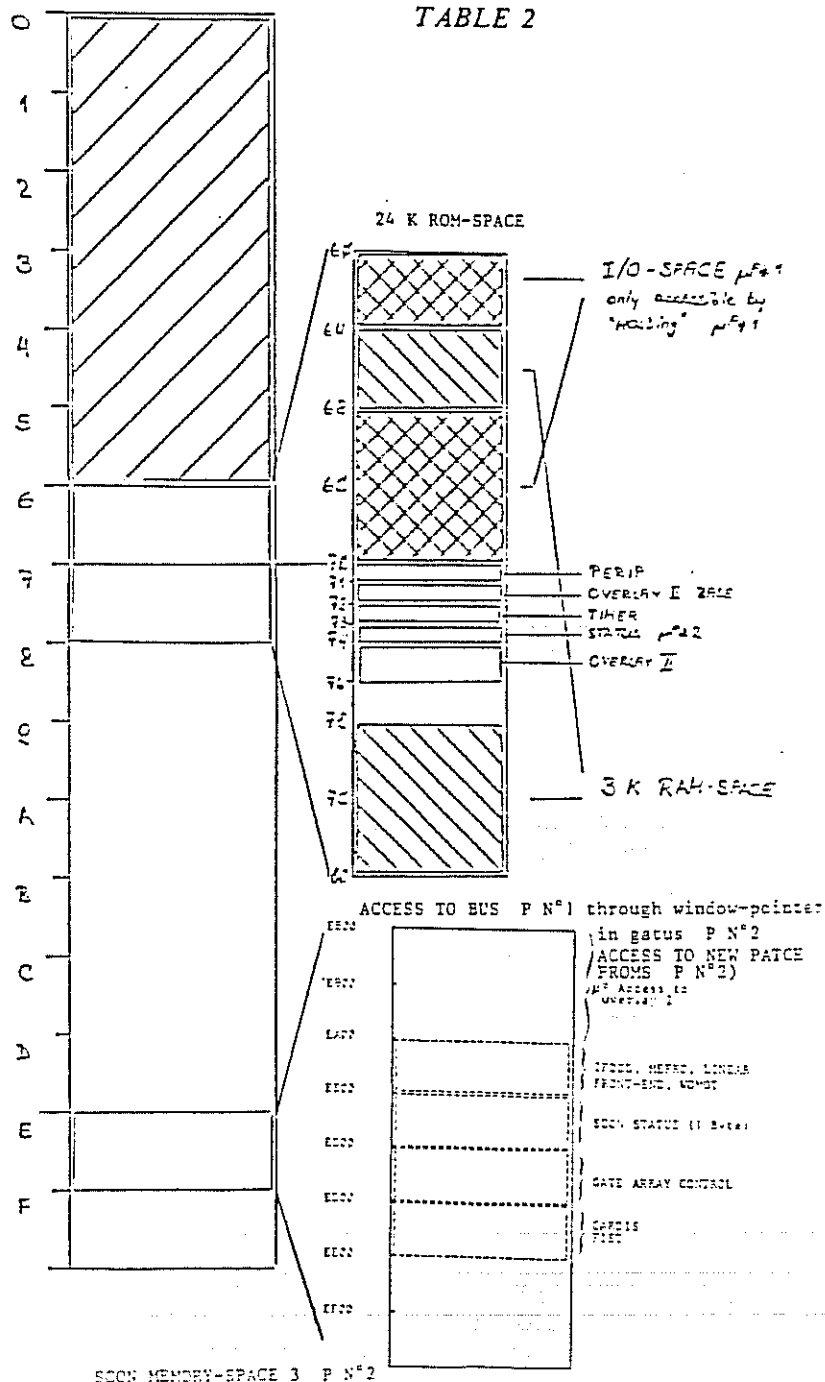
FIGURE : SCON MEMORY-SPACE.2 I/O $\mu P N^{\circ}1$

c) Microprocessor N°2

This is a 8085 based microprocessor, which performs all back-ground tasks of the system. On SCON2, there is a triple timer (used e.g. for the "beep"). Microprocessor N°2 has a bus connection to MEMEX for writing into the overlay II. It has a reduced bus connection (256 bytes) to PERIP, where the 8-channel A/D converter, two keyboard controllers, RS 232 and Floppy interfaces and a real time clock/permanent RAM are located. *Table 2* SCON.MEMORY Space 3 gives the memory space organization. It is also decoded by programmable devices and may therefore be changed during software development. The organization of the I/O space can be used from the description of PERIP (see table PERIP.CONTROL).

The main software functions of microprocessor N°2 are keyboard and gain control management, ECG tracing and trigger and overlay memory control. Because ROM-space of microprocessor N°2 is too small for all required functions, it can use 16k from the microprocessor N°1 space (PATCH-PROM) through the bus coupler for programs, Which are only used during frozen image. In this case, microprocessor N°1 is set to the HOLD state.

TABLE 2



- . The 16K byte PATCH PROM can be replaced by a 8K byte static RAM for RAM intensive applications.
- . An additional ROM-space of maximal 56K Byte is placed on the memory space of Microprocessor N°2 and therefore accessible at any time.

It is divided into 4K Byte-Blocks (programmable in a PAL) which are selected by the same window-selector-bytes in "Status 2" as for the PATCH-PROM, setting Bit 3 to 1 instead of 0.

The devices are selected by jumpers ST 1 to ST 4. The setting of these jumpers is shown in *Table SCON JUMPERS*.

There are 8 kbytes of static RAM with built-in battery backup. This nonvolatile memory is used for storing the user biometry functions and the state setups.

The memory space of SCON2 is shown in *table 2* page 21. The meaning of the bits of the SCON-Status-Registers (one on Microprocessor N°1 - side, one on N°2 - side) is shown in *table SCON Status Registers* (following page).

Finally SCON2 is prepared for use with a 8MHz processor-clock. In this case ST 5 (see *table SCON JUMPERS*) has to be programmed to include WAIT-cycles for all peripheral accesses and PERIP has to be fast enough to match the speed.

However the microprocessor is still running at 5.33MHz in Sigma 1.

ST 1	: Select the device which is installed at the middle socket on microprocessor 1 side (Z 110) :
	1 - 2 : RAM 8 K x 8 static
	2 - 3 : EPROM 16 K x 8
ST 2 to ST 4 :	Select the size of EPROM installed in the sockets Z 512, Z 513, Z514 on microprocessor 2 side :
	1 - 2 : EPROM 16 K x 8
	2 - 3 : EPROM 32 K x 8
ST 5	: Determines the microprocessor-clock for both microprocessors
	"8" : 8MHz clock (results in 250 ns cycle-time)
	"5" : 5.33MHz clock (results in 375 ns cycle time)

SCON JUMPERS Setting of Jumpers table

SCON STATUS micro-Processor 1 : Bit 0

- 1 DATA PROM
- 2
- 3 WE (OV)
- 4 WE (R)
- 5 INPOLEN
- 6 Ping Pong Status Plane A 0 = Write
- 7 Ping Pong Status Plane B 1 = Read

SCON STATUS micro-Processor 2 : Bit 0

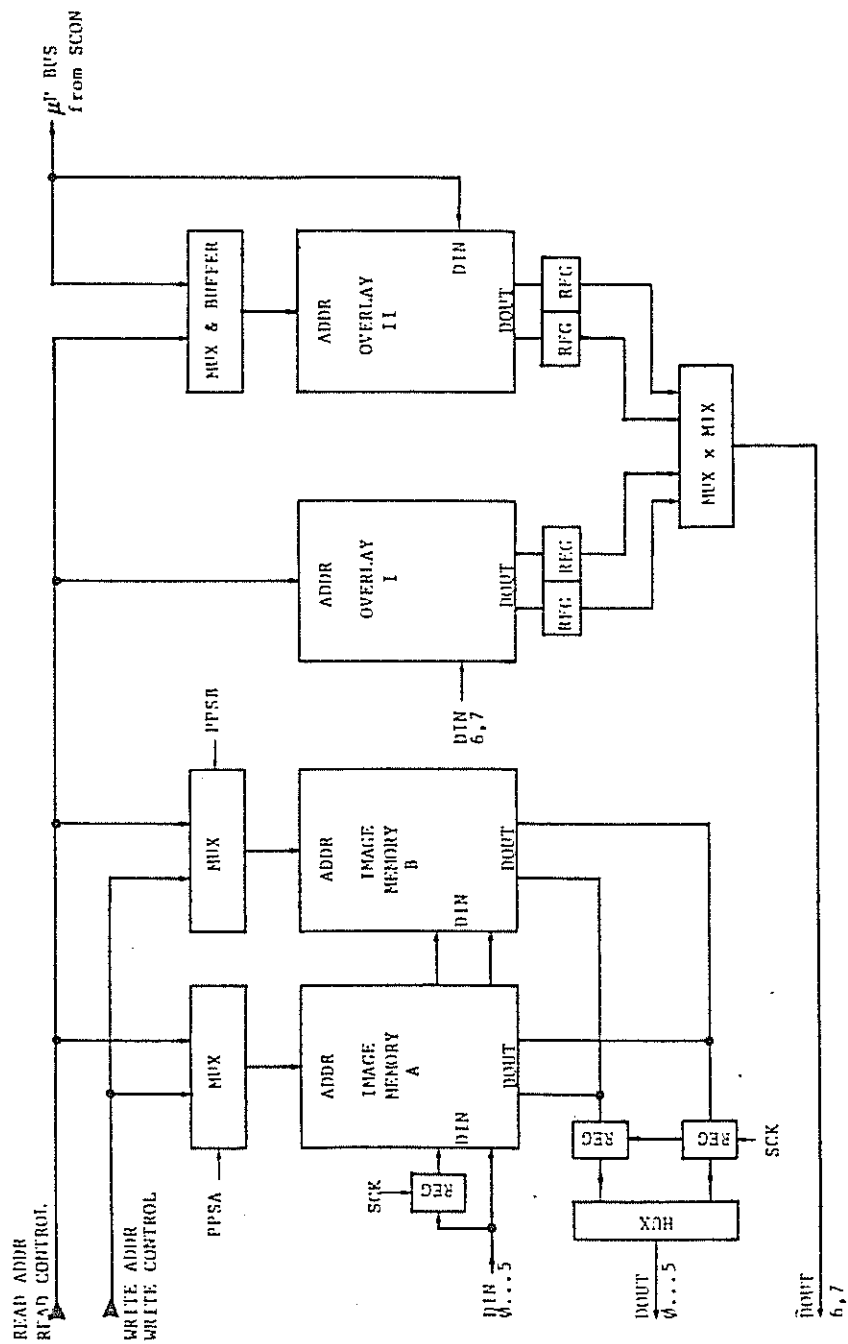
POST PROCESSING

- 1
- 2 n.a.
- 3 MMU-Control : 0 = micro Processor
N°1 Patch
1 = micro Processor
N°2 Patch
- 4
- 5 Window pointer (for micro processor
N°1-side)
- 6 Patch selector (for micro processor
N°2-side)

SCON STATUS REGISTER

3.5. Memex p.c.b.

3.5.1. MEMEX BLOCK DIAGRAM



3.5.2. DESCRIPTION OF MEMEX BLOCK DIAGRAM

Memex is an extension of the SCON board. It is directly connected to it by two 64 pin connectors. There are three different screen memories on SIGMA 1.

The largest one is the image meory which consist of two blocks of $512 \times 512 \times 6$ bits each. This is due to the "PING-PONG" scan conversion principle, where one memory block is read according to TV-standard, while a new image is written into the other block including all required geometric corrections. Then, the blocks are exchanged. The SCON board supplies two sets of address and control lines for read and write respectively. Each memory block has a multiplexer which selects either read or write address depending on the Ping-Pong status bits.

The second memory is the OVERLAY I, which has $512 \times 256 \times 2$ bits capacity. With two data bits, we can encode transparent, black, white and flashing pixels.

This memory is permanently connected to the read address lines. Therefore, the readout occurs in parallel with the image memory. The microprocessor can only access this memory during the vertical TV-retrace. The access-circuit is part of the "Read Gate Array".

The third memory is the OVERLAY II, which has $512 \times 256 \times 1$ bit capacity. It is far better accessible than OVERLAY I, because the microprocessor can access it during the whole TV-frame (but not during TV-retrace). After all, the access is not fully transparent, but produces transparent pixels on the TV-ouput. Therefore, flickering can occur, if many white pixels are displayed on OV II.

This memory is mainly used for displaying the ECG-trace and the TM-cursor, because this requires fast memory acces. Alphanumerics, centimeter scales and calipers are displayed by OVERLAY I. The microprocessor can not read from OVERLAY II. The opportunity to write into the image memory by the microprocessor is used for generating the greyscale testpattern.

Figure 3 shows how the image memory is organized in order to have a readout rate of 8MHz and sampling clock up to 5.33 MHz, using dynamic RAMs with 150 ns access and 270 ns cycle time. During read, a 2-word PAGE MODE is used and two memory banks are interleaved. During write, two words are written in parallel into two memory banks. Figure 4 shows the timing diagrams for read and write.

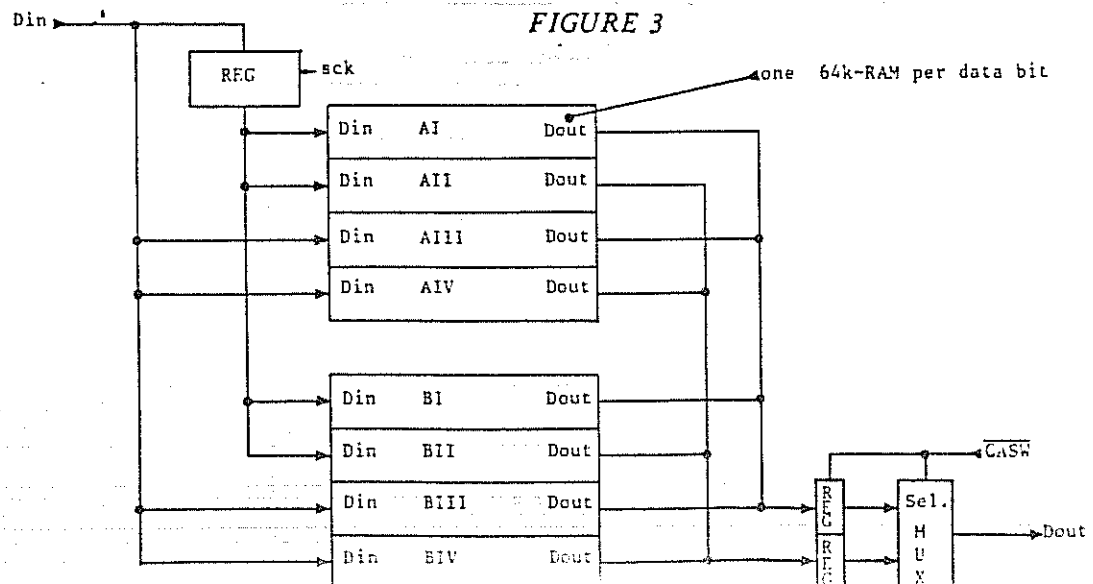


FIGURE 4

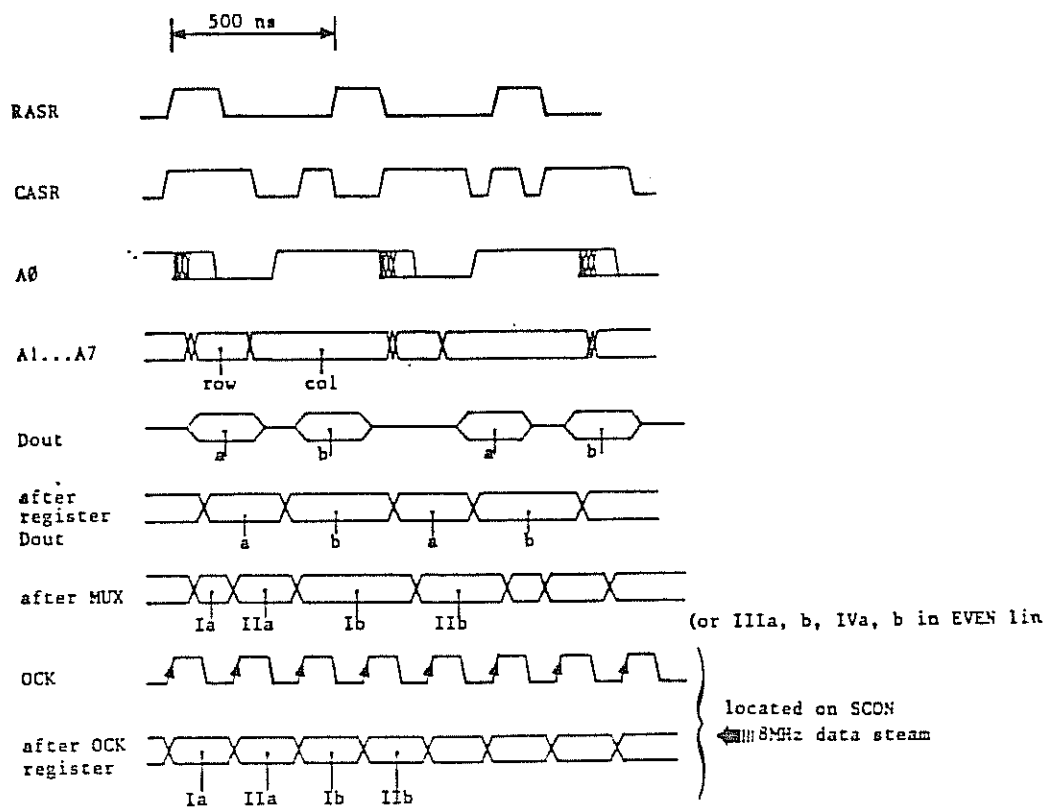
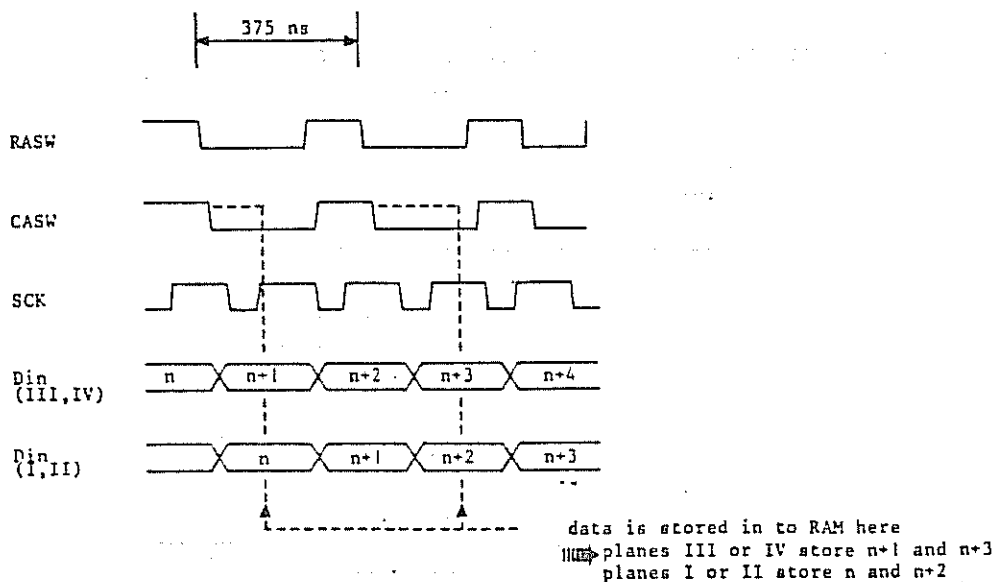


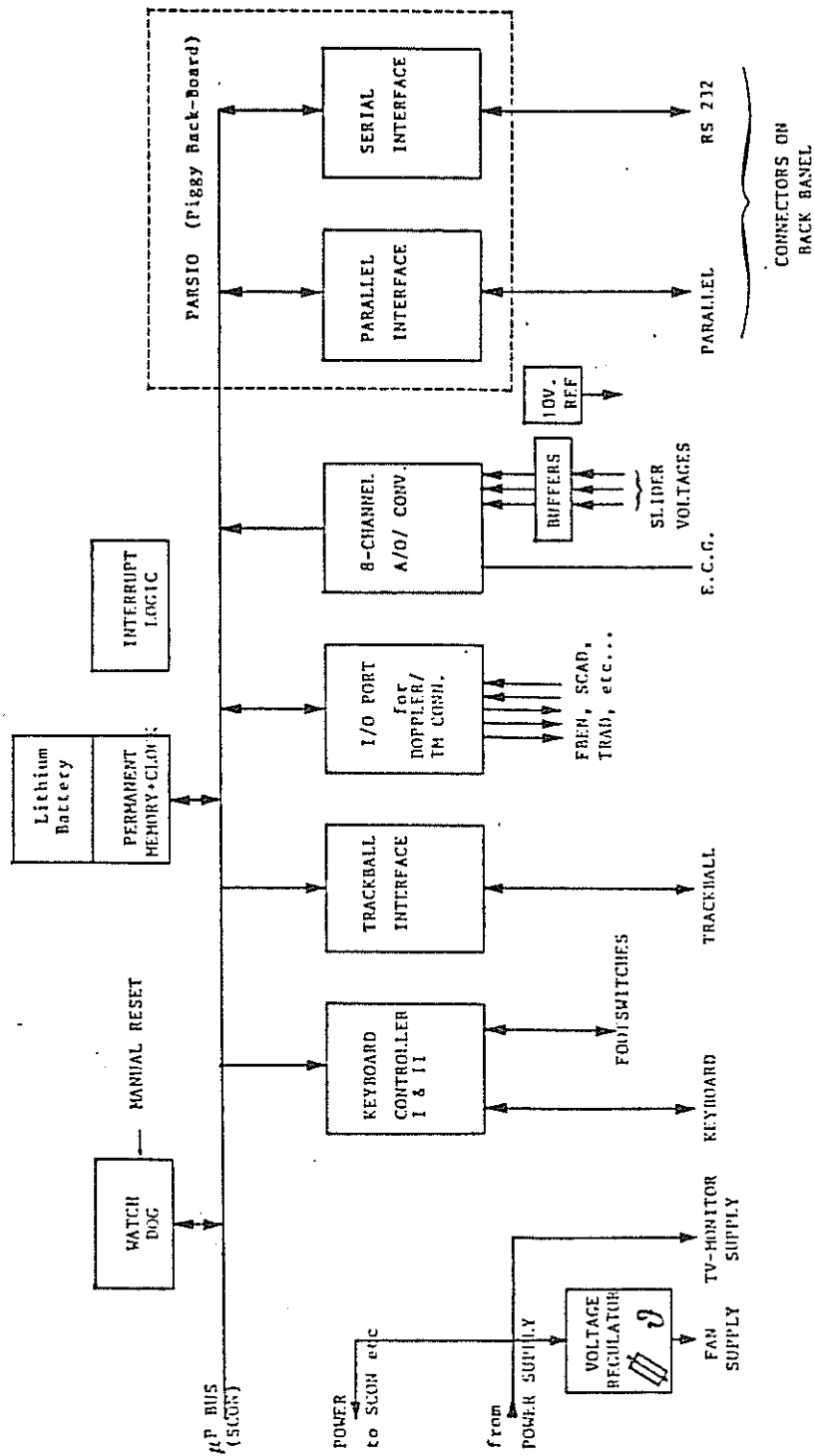
IMAGE MEMORY READ TIMING



Note: The frequency of SCK is variable (depending on display size, scale and angle). The first SCK cycle of 187ns is shown.

3.6. Perip p.c.b.

3.6.1. PERIP BLOCK DIAGRAM



3.6.2. DESCRIPTION OF PERIP BLOCK DIAGRAM

The watch dog detects the rare occasions where the microprocessor does not run properly. Then, it makes an automatic reset. There is a battery powered CMOS circuit containing a clock and a permanent memory of 56 bytes.

The board distributes the voltages from the power supply to different locations. The digital part is powered through a cable to the SCON board. The analog part is powered by the digital part. PERIP provides also the supply connection for the fans by a temperature dependent inside of SIGMA ISC. This minimizes fan noise. The microprocessor bus is interfaced to the keyboard and footswitches by two keyboards controllers. The trackball is connected via a trackball-interface, which is built by two PALs (field programmable array logic). In this interface, the clock pulses which are generated by the trackball as a function of the ball-rotation are counted. After several counts, an interrupt request is sent to the microprocessor, which can read the state of the counter. Some control signals which are required for the TM/Doppler interface, are driven or read by a I/O Port. These signals are listed in *table 5*.

There is an eight channel A/D converter. It makes it possible to access by the microprocessor the ECG-voltage and several slider or potentiometer voltages. Finally, there is a room for fixing a small piggy-back circuit on PERIP called PARSIO (for "parallel/serial input/output"). It contains a parallel and a RS 232 interface. The control words of PERIP are listed in *Table 6*.

TABLE 5

ADDRESS (HEX)	FUNCTION
00 - 3F	REAL TIME CLOCK WITH MEMORY
40 - 4F	KEYBOARD CONTROLLER I
49 - 4F	KEYBOARD CONTROLLER II
50 - 58	ANALOG TO DIGITAL CONVERTER
59 - 5F	STATUS BYTE
60 - 68	RS 232 INTERFACE
69 - 6F	PARALLEL INTERFACE
70 - 78	TRACKBALL INTERFACE
79 - 7F	NOT USED

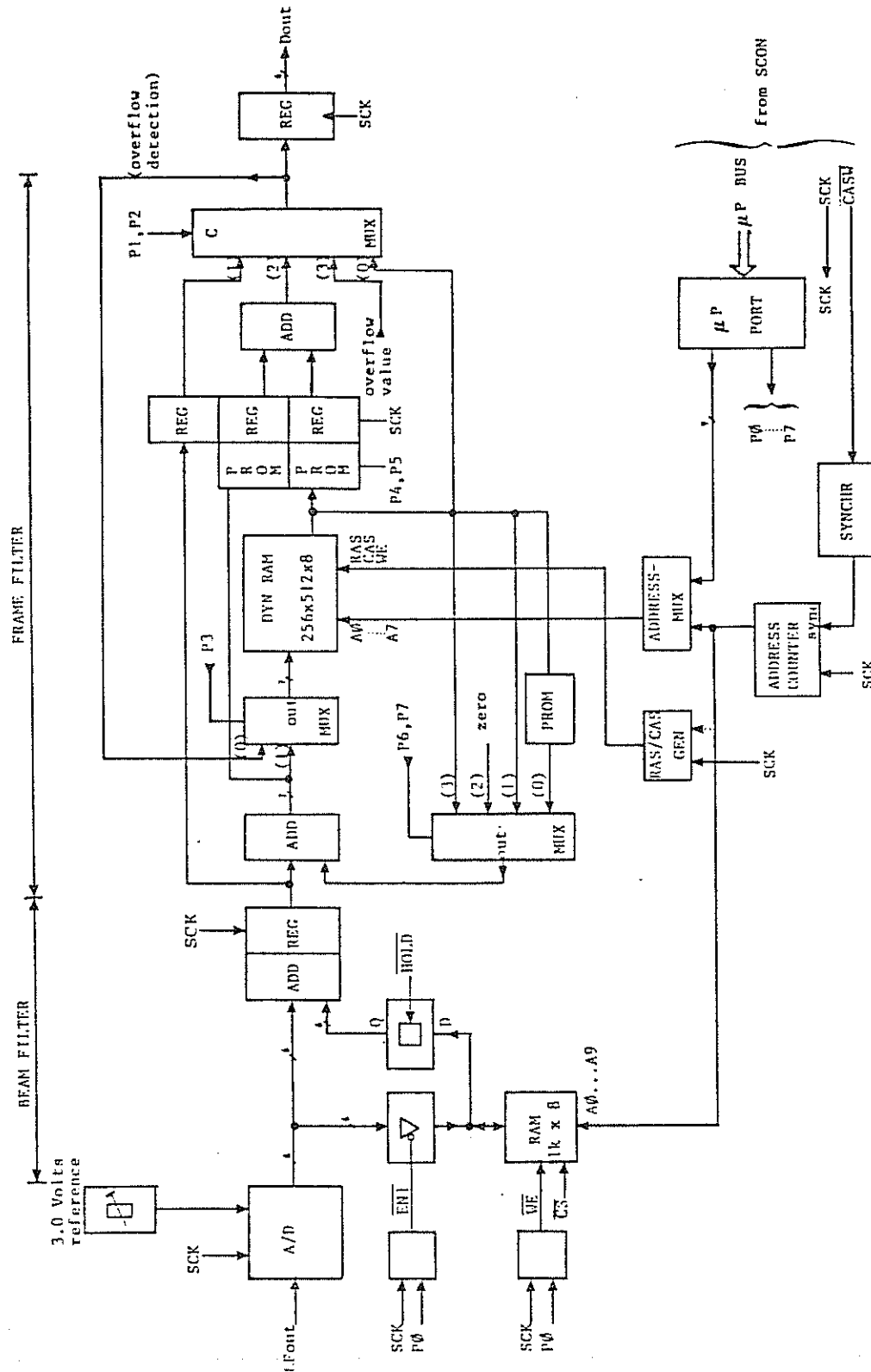
TABLE 6

ADDRESS (HEX)	BIT	FUNCTION
59 (STATUS WRITE)	0	PAGE PRINT COMMAND (ACTIVE HIGH)
	1	BLANK
	2	TRACKBALL INTERRUPT ENABLE
	3	GATE ENABLE (ACTIVE LOW EXT MARKS)
	4	FBEN
	5	ECG TRIG INTERRUPT ENABLE
	6	PARALLEL INTERFACE INTERRUPT ENABLE
59 (STATUS READ)	7	PARALLEL INTERFACE RESET
	0	ECG INTERRUPT PENDING
	1	ECG FAULT
	2	STRAP STATUS PAL/NTSC
	3	CARDIS (DETECTS PRESENCE OF BOARD)
	4	SCAD
	5	TRAD
59 (STATUS READ)	6	O
	7	PARALLEL INTERFACE INTERRUPT PENDING

ADDRESS (HEX)	A/D CONVERTER SIGNALS
50	FILTERED ECG
51	GAIN IMAGE
52	GAIN TM
53	SLIDER I
54	SLIDER X
55	NOT USED
56	0.67*FAN SUPPLY VOLTAGE
57	REJECT

3.7. Fist p.c.b.

3.7.1. FIST BLOCK DIAGRAM



3.7.2. DESCRIPTION OF FIST BLOCK DIAGRAM

This board contains two digital filter circuits. Its purpose is to increase image quality and to serve as a buffer memory for special functions like double image and Time Motion.

The first filter is a "beam filter". It can be switched ON and OFF by microprocessor-control. The beam filter calculates the linear average of two consecutive ultrasound beams. This reduces image granularity and increases signal noise ratio. The circuit contains $1k \times 8$ fast static RAM for the storage of the information of one ultrasound beam.

The second filter is a "frame filter". It can perform various filter functions (selected by the microprocessor) by mixing the echo amplitude of consecutive ultrasound images. Therefore, it contains a frame memory for images with up to 256 beams of 512 samples each.

The frame filters, which are actually implemented on the board, are defined by the PROM contents. There is a choice of "averaging" filters which gradually improve the smoothness of the image but also tend to smear moving objects.

In addition, there is one MTI filter function. At the input of the board there is a 6 bits analog to digital converter. It converts the incoming echo signal (called LFOUT, coming from the IFDOD board) into a digital number. The reference voltage of the A/D converter must be trimmed to 3.0 Volts. The sample clock (SCK) is delivered by the SCON board. Its frequency is variable with imaging scale and angle. The minimum sample interval is 187 ns.

For the synchronization of the filter, it is important to know the interval, during which the beam echoes are written into the image memory on SCON. For this purpose the image-memory write-clock CAS W is transmitted from SCON to FIST.

The pixel addressing is generated by a 12 bits counter on FIST by counting SCK-pulses. The beam addresses for the frame memory are controlled by the real-time microprocessor of SCON. The short data cycle of 187 ns required the interleaving of two banks of dynamics memories for the frame filter. For the definition of the controlwords, see *Tables 7 and 8* (following pages). Timing diagrams are given in *FIST 2.* and *FIST 3.*

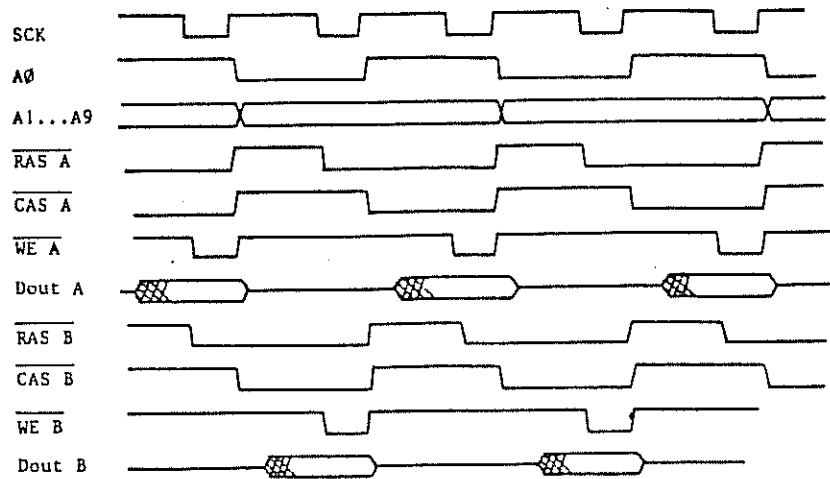
TABLE 7

ADDRESS	BIT	FUNCTION			
00	0	-			
	1	-			
	2	-			
	3	COL 0			
	4	.			
	5	.			
	6	.			
	7	.			
01	0	.			
	1	.			
	2	.			
	3	COL 9			
	4	-			
	5	-			
	6	-			
	7	-			
02	0	P0	0: BEAM FILTER OFF	1: BEAM F. ON	
	1	P1	00: FREEZE	01: FRAME F. OFF	
	2	P2	10: FRAME F.ON	11: NOT USED	
	3	P3	0: NORMAL	1: STORE FOR FREEZE	
	4	P4			
			0...3: PROM PAGE SELECT		
	5	P5			
	6	P6	00: RECURSIVE PROM	01: RECURSIVE x 0.5	
	7	P7	10: ZERO (TRANSVERSAL)	11: RECURSIVE x 0.5	
03	0				
	2				
	3				
	4	CONTROL WORD FOR MICROPROCESSOR INITIALIZED WITH 80H			
	5				
	6				
	7				

TABLE 8

VALUE (HEX)	FUNCTION OF FRAME FILTER	
0A	FILTER OFF (INCLUDING STORE FOR FREEZE)	
04		0
14	PROM-RECURSIVE	1
24	PROM PAGE	2
35		3
44		0
54	LINEAR RECURSIVE	1
64	PROM PAGE	2
74		3
84		0
94	TRANSVERSAL	1
A4	PROM PAGE	2
B4		3
08	LOGICAL "OR" OF ONE OF THE VALUES GIVEN ABOVE WITH 08 GIVES "STORE FOR FREEZE"	
01	THE VALUES GIVEN ABOVE RESULT IN "BEAM FILTER OFF". LOGICAL "OR" WITH 01 GIVES "BEAM FILTER ON".	
00	FRAME FILTER FREEZE	
NOTE : BEFORE ENTERING "FREEZE", ONE (AND ONLY ONE) FRAME MUST BE MADE IN THE STORE FOR "FREEZE" MODE.		

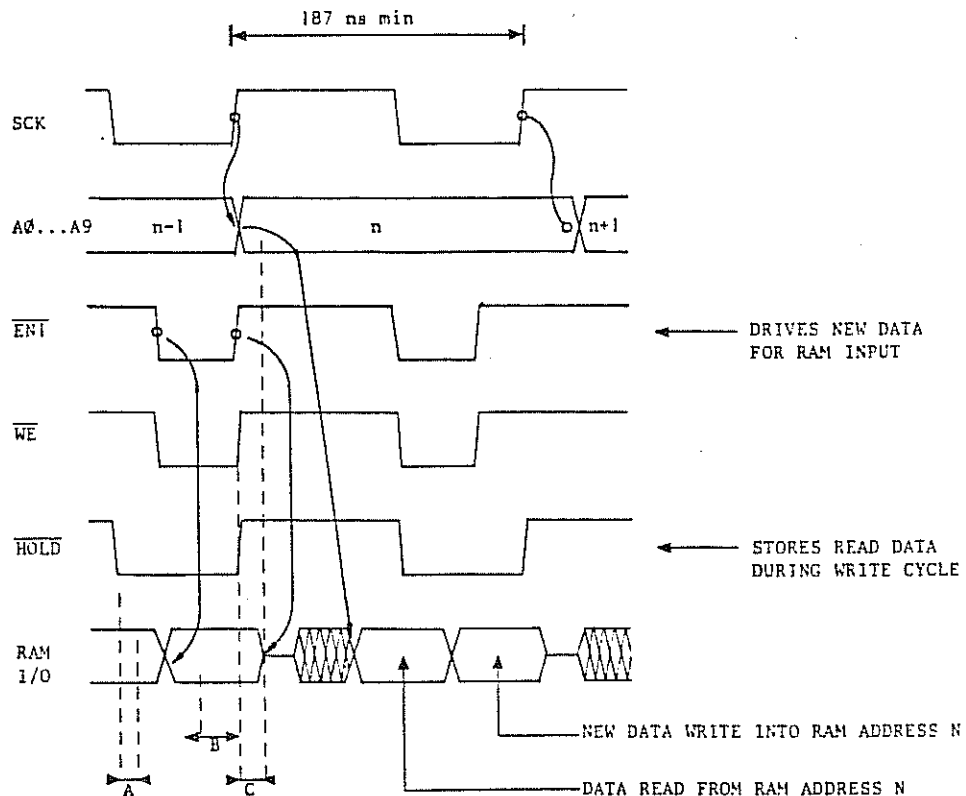
FIST 2



Note: Because of interleaved control signals, Dout A and Dout B are never active at the same time. Therefore, they can be directly connected.

Memories work in a read-modify-write cycle of 375ns min.

FIST 3



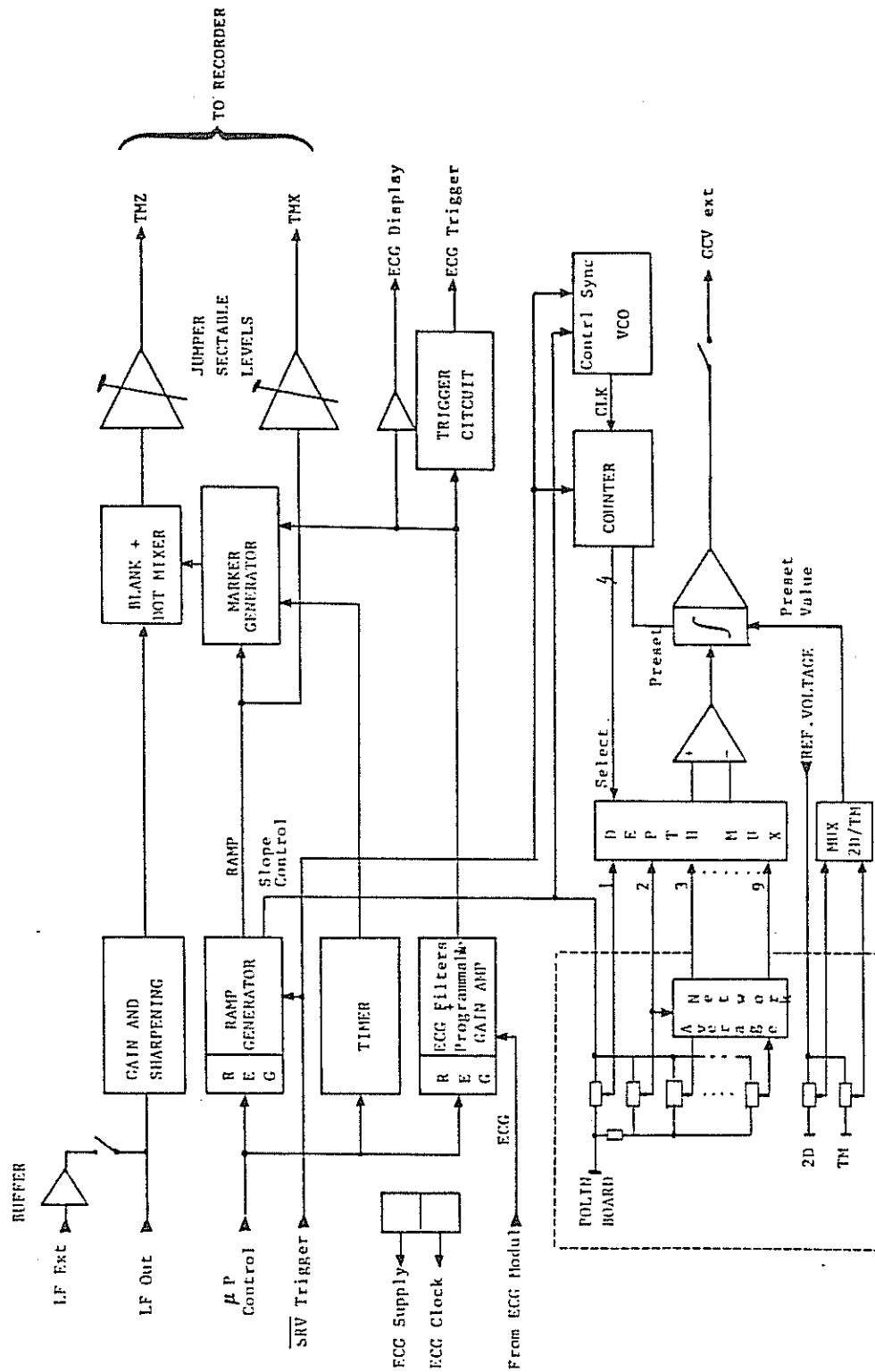
CRITICAL TIMING :

A: data hold at latch input after $\overline{\text{HOLD}}$	(min 20ns	LS 373)
B: write data setup before $\overline{\text{WE}}$	(min 20ns	6148-55)
C: address hold after $\overline{\text{WE}}$	(min 5ns	6148-55)

NOTE: For beam-filter off, $\overline{\text{CS}}$ of RAM is high and $\overline{\text{ENI}}$ is always low.

3.8. Cardis p.c.b.

3.8.1. CARDIS BLOCK DIAGRAM



3.8.2. DESCRIPTION OF CARDIS BLOCK DIAGRAM

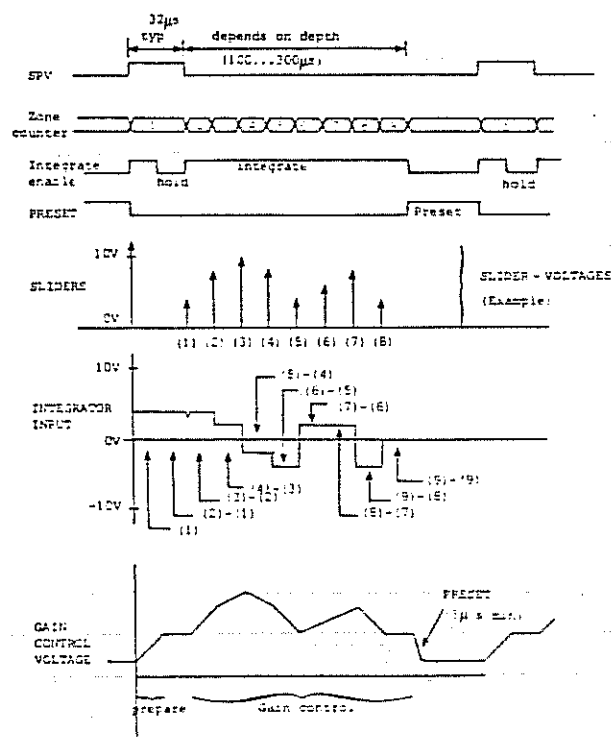
The CARDIS board contains all functions which are required for a scanner which is specialized for cardiology. Basically, there are three sections : gain control, TM-recorder interface and ECG interface. The gain control circuit works with nine rectilinear potentiometers for time gain compensation. The zones are automatically distributed over the selected imaging depth by the same programmable control voltage that controls the TM deflection signal. There are two sliders for independent settings of overall gain in 2D and TM-mode. For optimum user comfort, there are two special features in the TGC-control. First the gain control range of the first slider is larger (80 dB) than the range of remaining sliders which is 60 dB. Second the settings of sliders 3 to 9 are not connected directly to the gain control circuit. Instead the voltage of two adjacent sliders are averaged by two resistors. This gives a smoothing effect on the TGC-curve which makes it easier to set a good curve. These two features are realized by resistor networks sitting on the POLIN board. POLIN is a small PCB behind the front panel, which carries the sliders.

The TGC-voltage is generated by an integrator. At the end of a reception, the integrator is preset to a value given by one of the overall gain potentiometers.

During the SRV-pulse (which is the preparation time for the next ultrasound beam) "DEPTH MUX" selects the voltage of slider 1 and integrates it over one depth interval in order to get the start gain. During reception, the integrator integrates during 8 intervals the voltage difference between two adjacent slider signals. The "DEPTH MUX" steps through sliders 1 to 9. It is controlled by a counter which in turn is clocked by a VCO. The frequency of this VCO is set accordingly to the selected penetration depth.

Figure 9 shows the timing diagrams of the TGC-circuit. The TM-interface provides two signals : TMZ and TMX. The TMZ signal is the echosignal which comes on LFOUT (driven by IFDOD) amplified and mixed with blanking and time-depth markers and the ECG channel signal LF EXT. This will be used for displaying the results of an external Doppler system on the screen of SIGMA 1.

FIGURE 9



The signal amplifier includes a high frequency enhancement which gives better TM quality. The output amplifier has strap selectable levels (see *Table 10*). The TMX-signal is the deflection ramp. It is generated by an integrator. Its slope is programmable depending on the selected penetration depth. The retrace has a constant slope of several hundred microseconds. The output amplifier also has strap selectable levels.

TABLE 10

STRAP 1 : TM-Z (SIGNAL)			STRAP 2 : TM-X (DEFLECTION)	
BLANK	WHITE	BLACK	DEFLECTION VOLTAGE (V_{pp})	
A-0.3	0	3	A	3
B 0.4	1	2.5	B	6
			C	16

Note : SIGNAL-Voltage measured at 50 Ohm termination. For best TM-quality, it is recommended to terminate the signal with 50 Ohm either inside of the TM-recorder or by a termination resistor at its input.

The time-depth markers are controlled by a programmable timer. The markers are tiny black dots surrounded by white rectangles. Horizontal dot size is given by a PAL where two modes are selectable by the microprocessor. The length of the dot pulses is automatically adjusted depending on the deflection speed in order to give approximately equal dot width for all depths.

Figure 11 shows the TMZ and TMX-signal including time-depth marker.

FIGURE 11

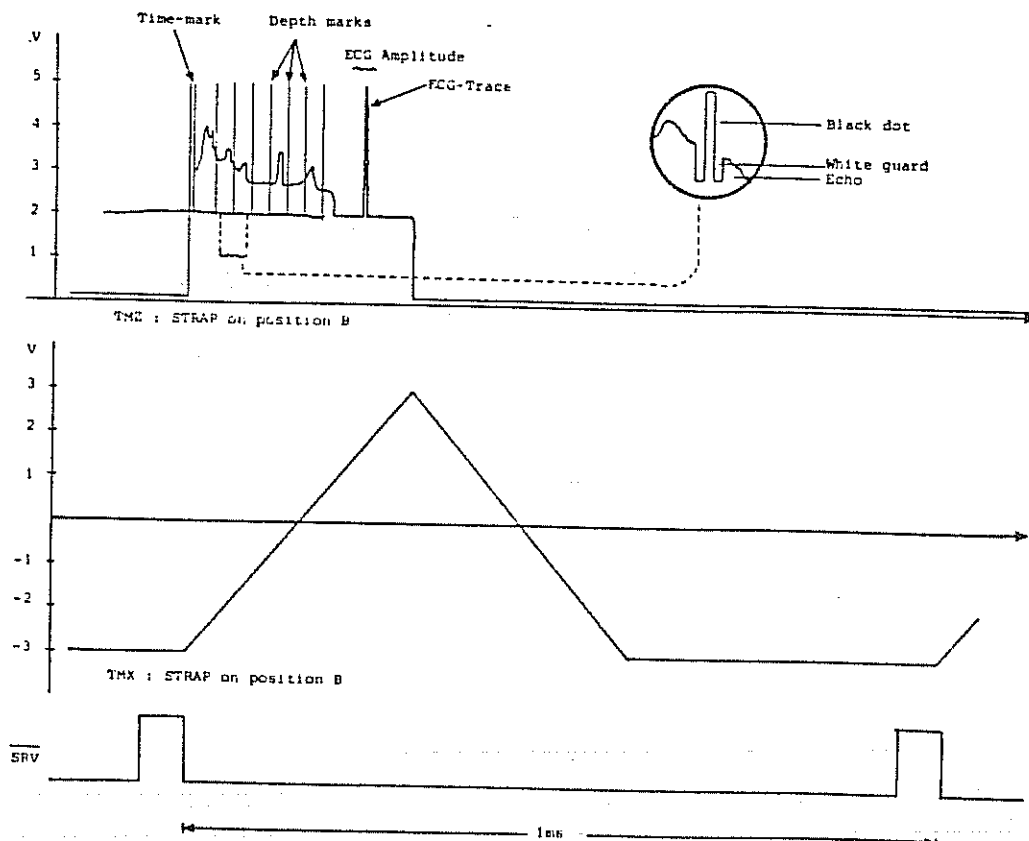
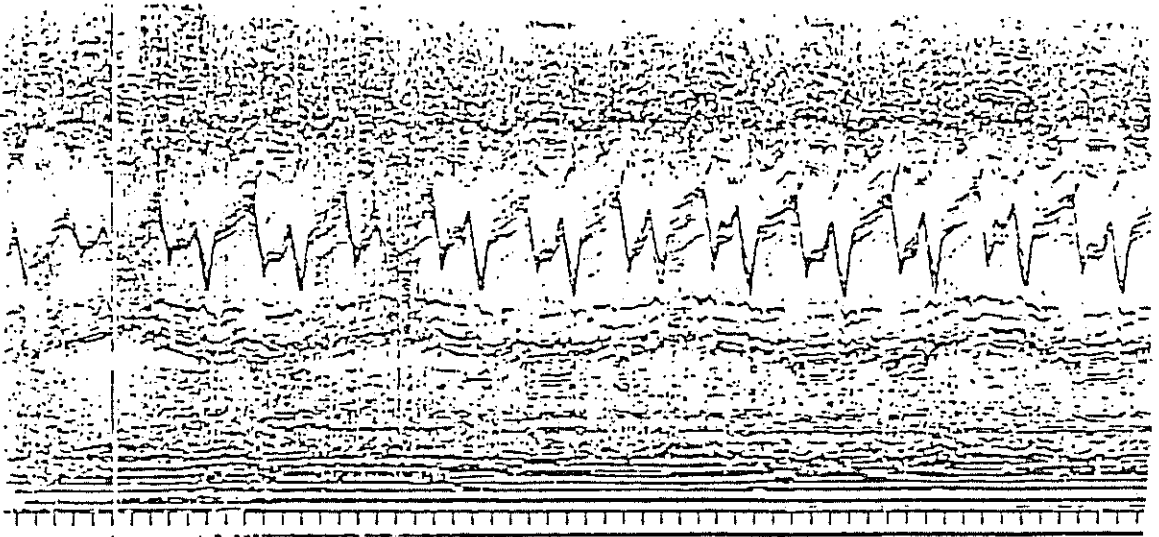


Figure 12 shows the example of a TM-output, showing tic-marks every 200 ms and time-depth marks every second. Note that the TM-interface must work at a 1KHz pulse repetition frequency on SRV. The ECG signal is preamplified and isolated by the ECG module, which is manufactured by Kontron Instruments Ltd, England. It is a modified version of the module used in MICROMON.

FIGURE 12



The module needs a 72 kHz clock and $\pm 10V$ power, which is supplied by CARDIS. The output signal of the module needs some filtering. On CARDIS, there are two notch filters at 50 Hz and at 60 Hz in order to remove interference from the mains voltage. There is a low pass with 20 Hz cutoff-frequency. Afterwards, the signal is amplified with a programmable gain by a multiplying D/A converter. The output signal is sent at four places. First to the ECG trigger section, second to the circuit which displays it on the TM-record, third to the A/D converter located on PERIP in order to display it on the TV-screen and finally to TM/Doppler connectors on the rear panel in order to display it by external means. Most of the signal on that connector come from the CARDIS board. The pinout of it is given on Table 14. The microprocessor control words are explained in Table CARDIS.CONTROL 13.

TABLE 13

ADDRESS (HEX)	BIT	FUNCTION
20	0	TIMER 0 (DIVIDES THE 1kHz SRV BY TEN, 100 Hz CLOCK)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
21	0	TIMER 1 (NOT USED)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
22	0	TIMER 2 (TRIGGERS DEPTH MARKERS)
	1	
	2	
	3	
	4	
	5	
	6	
	7	
23	0	CONTROL WORD OF TIMER
	1	
	2	
	3	
	4	
	5	
	6	
	7	
24	0	SLOPE OF TM-X DEFLECTION
	1	
	2	
	3	
	4	
	5	
	6	
	7	

TABLE 13

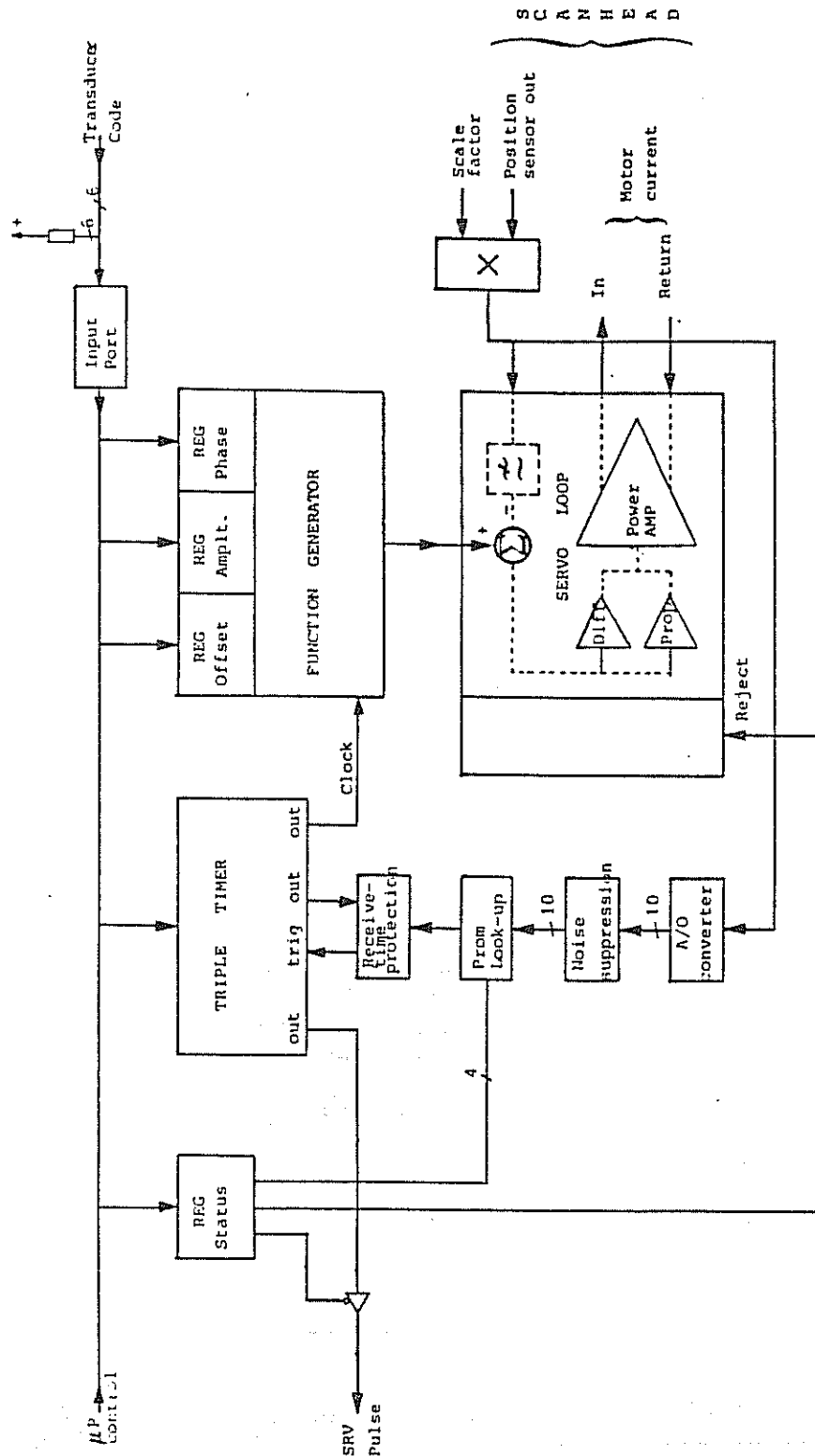
30	0	GCV DRIVE (ACTIV HIGH)
	1	TM-MODE (ACTIVE HIGH)
	2	DRIVE LFOUT BY EXTERNAL LF IN (ACTIV LOW)
	3	FORCE SLIDER SUPPLY TO 10 VOLTS REF (ACTIV LOW)
	4	DRIVE SRV BY EXTERNAL INPUT (ACTIV LOW)
	5	ENABLE ON-BOARD SRV (ACTIV HIGH)
	6	MARKER MODE SELECT
	7	TM-PROCESSING (ACTIVE HIGH)
34	0	
	1	
	2	
	3	
	4	ECG GAIN
	5	
	6	
	7	

TABLE 14

PIN	SIGNAL	FUNCTION
1	MCLK	8 MHz Master Clock output
2	14 GND	
2	BLCK	Beam Clock output
3	15 SRV int	Internal SRV output
3	GND	
4	16 SRV ext	External SRV input
4	ZMB	Zero Beam output
5	17 GND	
5	SCAD	Scan disable inputs to
6	18 TRAD	Transmit disable microprocessor
6	+5	Protected 5 Volts supply 0.3A max
7	19 FBEN	Fixed beam enable output
7	GATE	Gate-marker input
8	20 GND	
8	LF IN	External LF input
9	21 GND	
9	TMX	Line scan recorder X-signal output
10	22 GND	
10	TMZ	Line scan recorder Z-signal output
11	23 GND	
11	GCV	Gain control voltage input/output
12	24 EGC	ECG signal output
12	PAGE PRINT	Line recorder PRINT command
13	25 GND	
13	BLANK	Software controlled blank

3.9. Womot p.c.b.

3.9.1. WOMOT BLOCK DIAGRAM



3.9.2. DESCRIPTION OF WOMOT

The WOMOT board controls the servo system of the mechanically wobbling sector scanhead. There is a programmable function generator which generates the desired position control voltage. There is a servo loop, which keeps the error between the desired position and the actual position (which is measured by a position-sensor in the scanhead) to a minimum.

The trigger pulses for the acoustic transmission are derived from the actual position. For that purpose the latter is converted to a 10 bit digital value which addresses a PROM look-up table, where the transmit-positions are stored. There are security circuits which protect against double triggering and excessively short intervals between transmit pulses.

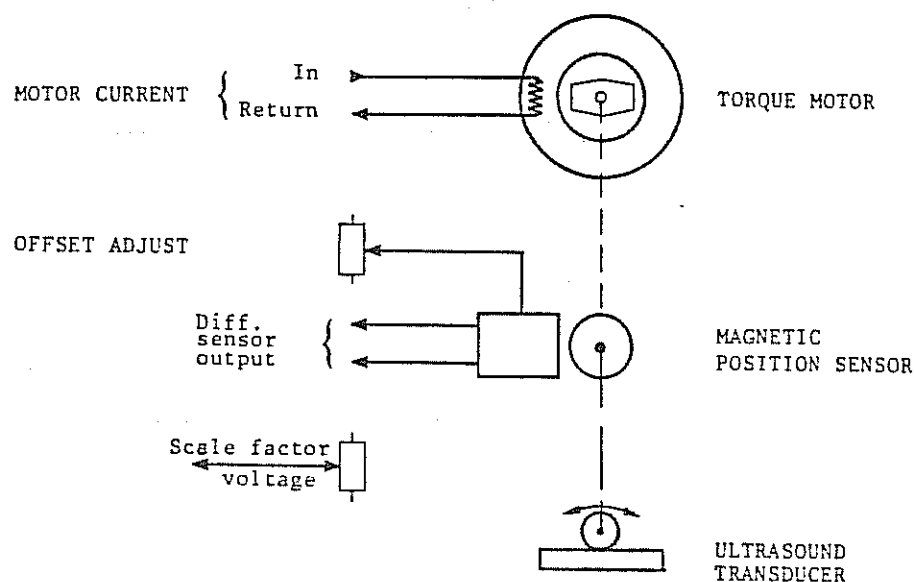
There is also a microprocessor input for reading the transducer code.

The function generator is driven by a programmable clock frequency in order to select the desired frame rate. A Modulo 3200 counter counts this clock and addresses a PROM table, where a sine-function is stored with 12 bit precision. The output of the PROM is converted into an analog voltage. The amplitude of the sinewave is adjusted by applying a programmable voltage to the reference input of the D/A converter. The phase of the sinewave can be controlled by the microprocessor by presetting the counter to a programmable state. To this sinewave, an offset voltage is added, which is also programmable by the microprocessor.

In the servo loop, the position sensor output is first multiplied by a scale factor voltage, which is delivered by the scanhead. The resulting voltage is fed to the A/D converter. The signal is also low pass filtered and subtracted from the function generator output. The resulting error is amplified by a proportional and a differential channel and subsequently drives the power servo amplifier. The latter works as current source, because this avoids any phaseshift due to the motor inductance. A security circuit controls the power amplifier. If an illegal state is detected, the motor current is interrupted. This protects the power amplifier and the scanhead from overheating.

Figure 15 shows the principle of the wobbler scanhead.

FIGURE 15



Tables 16 and 17 explain the microprocessor control words.

TABLE 16

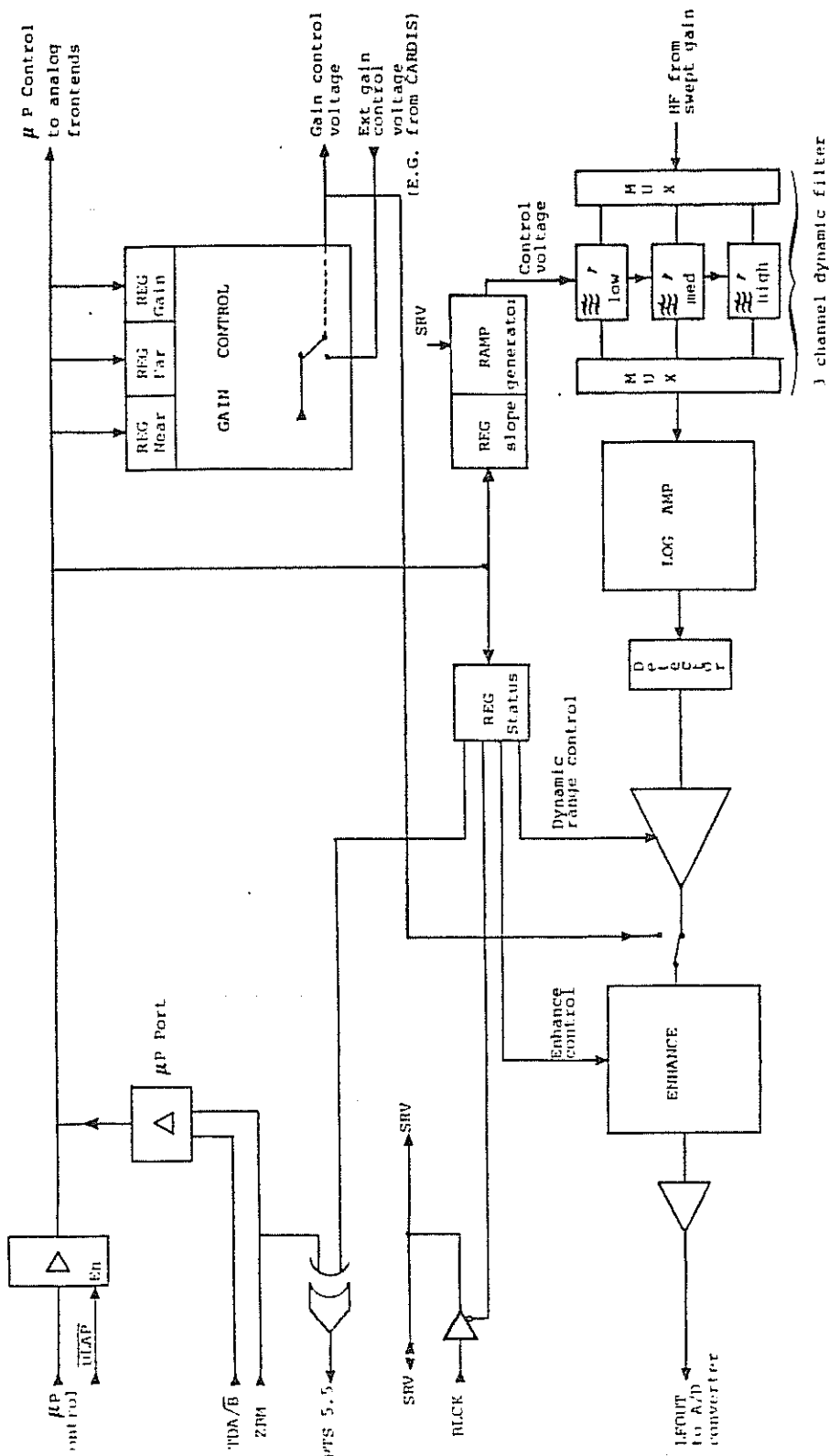
ADDRESS (HEX)	BIT	FUNCTION
04	0	LOAD COUNTER PHASE
	1	
	2	
	3	
	4	
	5	
	6	
	7	
05	0	INPUT TRANSDUCER CODE
	2	
	3	
	4	
	5	STATE OF POWER UP RESET (1 = ACTIV)
	6	
	7	
07	0	DRIVE SRV LINE (ACTIV HIGH)
	1	RESET SECURITY CIRCUIT (ACTIV HIGH)
	2	SINE-LOOK-UP PROM: A12
	3	POSITION VOLTAGE LOW PASS CONTROL : NORMALLY LOW
	4	SCAN CASE (STATE PROM)
	5	
	6	
	7	
22	0	LOW BYTE
	1	
	2	
	3	
	4	
	5	
	6	
	7	
23	0	POSITION OFFSET CONTROL
	1	HIGH BYTE
	2	
	3	
	4	
	5	
	6	
	7	

TABLE 17

ADDRESS (HEX)	BIT	FUNCTION
24	0	TIMER 0 : SRV PULSE LENGTH
	1	
	2	
	3	
	4	
	5	
	6	
	7	
25	0	TIMER 1 : RECEIVE-TIME PROTECTION
	1	
	2	
	3	
	4	
	5	
	6	
	7	
26	0	TIMER 2 : PRESCALER FOR FUNCTION GENERATOR CLOCK
	1	
	2	
	3	
	4	
	5	
	6	
	7	
27	0	TIMER MODE CONTROL
	1	
	2	
	3	
	4	
	5	
	6	
	7	

3.10. Ifdod p.c.b.

3.10.1. IFDOD BLOCK DIAGRAM

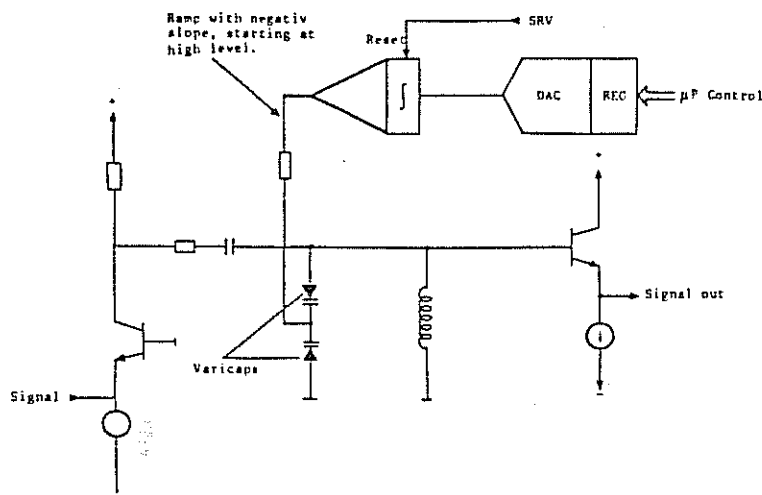


3.10.2. DESCRIPTION OF IFDOD BLOCK DIAGRAM

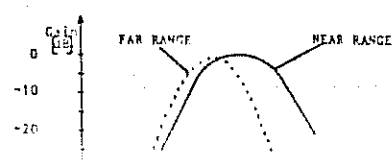
IFDOD is the heart of the analog part. There is an interface between the microprocessor control bus and the frontend boards. It desactivates all digital control lines inside the analog part all the time, except when an access to the analog part occurs. This access must not occur during the reception time. That way, the risk of coupling digital noise into the receiver is minimized. Second, of all, there is a programmable gain control voltage generator for non-cardiac applications. It has three control parameters : near gain, far gain and overall gain. The change over between near and far gain is given by the hardware and has two selectable states for a coarse adaptation to the penetration depth. On the output, there is a multiplexer which can alternatively select an external gain control voltage. CARDIS delivers on this line its special gain control voltage. Based on the clinical evaluation of Sigma 1 it was decided, not to use the gain control circuit IFDOD. Hence for all application, the TGC curve is delivered by CARDIS. The circuit on IFDOD is only used for generating the TM-greyscale. In this cas, the "gain control voltage" is injected to the LFout line by a multiplexer which is located in front of the enhance circuit. Third of all, there is some logic for the real time control signals. There is a driver, which can drive the SRV-line by the Beam clock signal. There is also an EXOR gate, which generates microprocessor interrupts on the ZBM-transmissions.

The most important circuit on the board is the signal processing chain. First, the high frequency echo signal coming from the swept gain amplifier is filtered, in order to optimize the signal to noise ratio. There is a dynamic bandpass filter. It is explained in *figure 18*. In the near range, where the echo signals are strong and contain a lot of high frequency components, the center frequency of the filter is high and its bandwidth is large. With increasing depth, the high frequency components are strongly attenuated by the tissue. Therefore, it is optimal, to shift the center frequency of the filter to lower values and decrease the bandwidth. The voltage ramp which controls the filter is programmable and there are three different filters. This way, the filter function can be perfectly adapted to the transducer frequency and the desired penetration depth. After filtering the signal goes to the logarithmic amplifier. It is optimized for 60 dB dynamic range and clean impulse response from 2 to 10 MHz operating frequency.

FIGURE 18



QUALITATIVE CHARACTERISTIC OF DYNAMIC FILTER



After detection, the signal is low pass filtered. There are two selectable cutoff-frequencies. The next stage offers a choice of eight different gain and offset settings. This is used for the "REJECT" function and defines the dynamic range which is used for further processing and display. Now, the signal is processed by the "sharpening" or "enhance" circuit. Its purpose is to enhance the visibility of transitions in the image and eventually perform an automatic gain control. The optimal sharpening depends on the application of the instrument and on the user. Therefore, the user can select from seven states. There is an "off" state. There are three "expand" states, which enhance edges on the image without touching the grey levels of larger regions. This is suitable for cardiac imaging. There are three "compress" states, which produce sharp transitions but also decrease the contrast of large regions and include an AGC function. This is suitable for abdominal imaging.

The "expand" states are indicated on the screen as ENH1 to ENH3. The "compress" states as ENH-1 to ENH-3.

The output amplifier drives the LFOUT line. There is a multiplexer which can apply the gain control voltage to LFOUT. This is useful for generating a grey scale on the LFOUT line e.g. for adjusting the TM recorder.

The microprocessor control-words are given in *Table 19*.

TABLE 19

ADDRESS (HEX)	BIT	FUNCTION
30	0	OVERALL GAIN CONTROL
	1	
	2	
	3	
	4	
	5	
	6	
	7	
31	0	NEAR GAIN CONTROL
	1	
	2	
	3	
	4	
	5	
	6	
	7	
32	0	FAR GAIN CONTROL
	1	
	2	
	3	
	4	
	5	
	6	
	7	

33	0	TD A/B	Note: Accessing this port a BMK-PULSE for the linear front end.
	1	ZBM	
	2		
	3		
	4	- INPUT PORT	
	5	-	
	6	-	
	7	-	
34	0	DRIVE SRV BY BCLK LINE: ACTIVE LOW	
	1	APPLY THE GCV SIGNAL TO LFOUT: ACTIV LOW	
	2	USE EXTERNAL GCV: ACTIV LOW	
	3	NEAR/FAR GAIN COMMUTATION: 0=EARLY 1=LATE	
	4	SRVHOLD: IF HIGH: SRV IS HELD IN THE ANALOG PART	
	5	ZINV: INVERSION BIT FOR ZBM	
	6	TRAD: CONTROLS TRANSMIT DISABLE BIT IN ANALOG PART	
	7	BLD: BEAM LOAD FOR LINEAR FRONT END	
35	0		
	1		
	2	SLOPE CONTROL FOR DYNAMIC FILTER	
	3		
	4		
	5		
	6	DYNAMIC FILTER 00: LOW 10: HIGH	
	7	FREQUENCY SELECT 01: MED 11: NO FILTER	
36	0	SHARPENING CONTROL	
	1		
	2	SELECTS CAP CIRCUIT	
	3		
	4		
	5	DYNAMIC RANGE CONTROL	
	6		
	7	EXPAND/COMPRESS	

Table 22 MEFRO.CONTROL explains the microprocessor bytes of the board.

TABLE 22

ADDRESS (HEX)	BIT	FUNCTION	
14	0	TRANSMIT FREQU. SELECT - HIGH BIT	
	1		
	2		
	3		
	4		
	5		
	6		
	7		
TRANSMIT PATTERN			
15	0	TRANSMIT FREQ. SELECT - LOW BIT	
	1		
	2		
	3		
	4		
	5		
	6		
	7		
16	0	SELECT TD A/B	
	1	RELAY 1	
	2	RELAY 2	0 = PASSIVE 1 = ACTIVE
	3	RELAY 3	
	4	TRANSMIT POWER:	0 = FULL 1 = HALF
	5	PREGAIN:	0 = FULL 1 = REDUCED
	6	BANDPASS FILTER SGM:	0 = LOW 1 = HIG BAND
	7	BOARD ENABLE:	0 = ENABLE 1 = DISABLE
17	0	CONTROL WORD FOR MICROPROCESSOR-PORT INITIALIZED WITH 80 (HEX)	
	1		
	2		
	3		
	4		
	5		
	6		
	7		

MEFRO B performs basically the same functions as MEFRO, which is used on Sigma 1SC. It is fully compatible with the old board and can be installed either on Sigma 1SC or in Sigma 1, provided that the strap ST 1 is on position REL 1.

The strap is located in the middle of the board near the bottom and the jumper must be set on the right side.

The following features are new on this board :

There is only one transmitter circuit, which is multiplexed by REL 2 either on TDA (for imaging) or on TDB (for mono-operation).

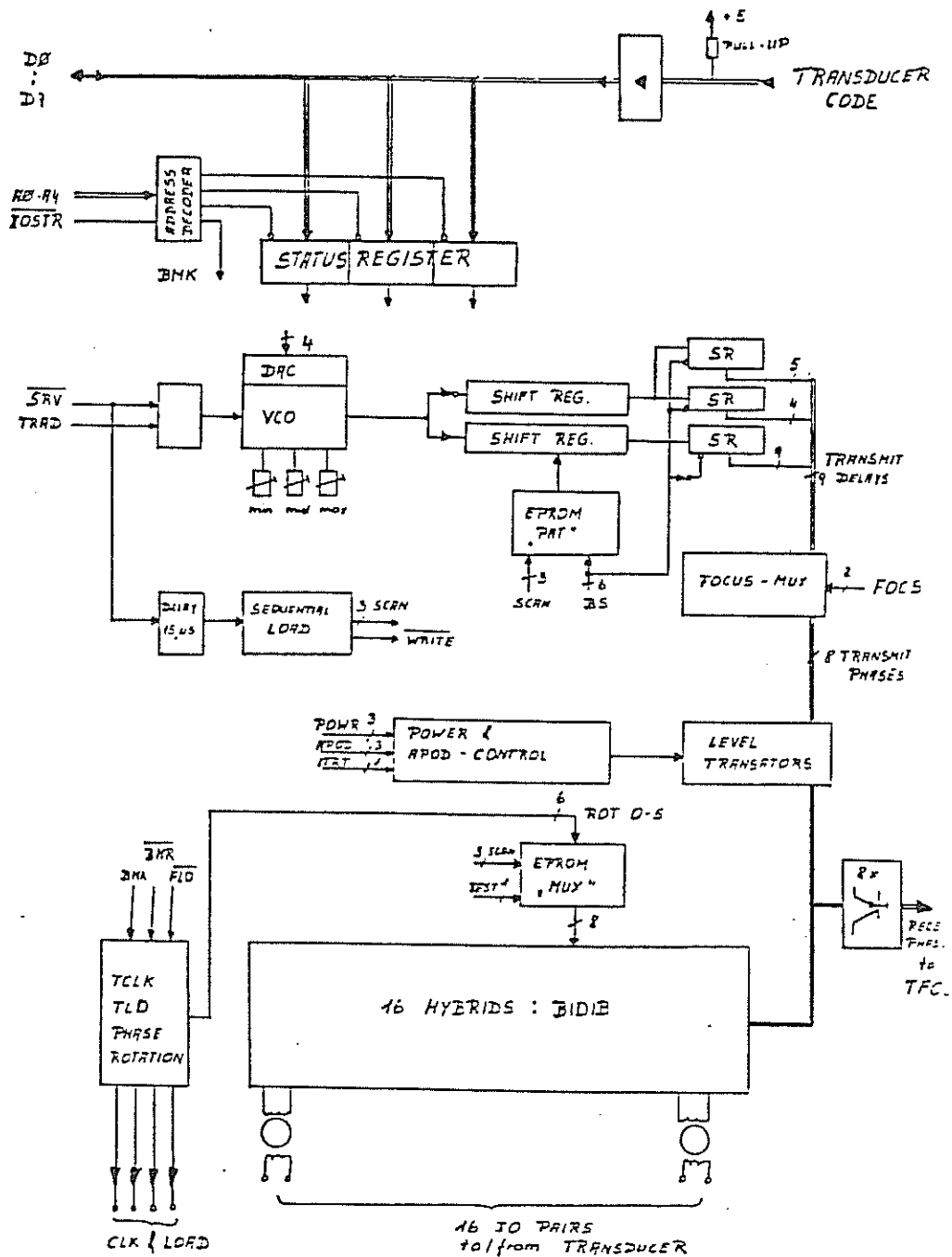
The transmitter circuit, has been modified for reduced power dissipation in the DS0026, wider bandwidth and better immunity against variations of powerfet threshold voltage.

In Sigma 1, REL 1 is used for switching the swept gain module input to the SHMD signals (TFOC output). In effect of the new ST 1 the MEFRO transmitter switches off as soon as REL 1 is activated. (If ST 1 is in REL 2 position, the transmitter can be controlled by an independent control bit).

The pattern on Z 14 and Z17 shift registers is wired with a one-bit shift compared to the old board. This delays the transmit pulse by one clock cycle (between 25 and 50 ns), but improves the timing accuracy of the transmitt signal.

3.12. Sisend p.c.b.

3.12.1. SISEND BLOCK DIAGRAM



3.12.2. DESCRIPTION OF SISEND BLOCK DIAGRAM

This board is quite similar to the ULAP SEND board. It has 16 hybrid transmitter/receiver channels and the shift/load logic required for controlling ULAP linear and curved linear transducer as shown on the SISEND Bloc Diagram. There is also a transmit-pulse generator built from a VCO and some logic followed by a programmable level translator stage in order to generate eight phase and amplitude controlled transmit control signals. The receiver outputs are connected through common-base buffers to ULAP TFOC board.

Although the functions of SISEND are quite similar to the SEND board, the microprocessor interface is quite different. It is explained in detail in a) page 58.


The hybrid circuits were also redesigned in order to put the multiplexer-control register onto the hybrid circuit. Power dissipation was also reduced. The new hybrid, which is called BIDIB, is described in b) page 60.

The voltage controlled oscillator which generates the transmitter-clock has been redesigned in order to achieve better stability. It is described in c) page 62.

There is a new transmit pattern generator which offers many possibilities in producing optimized transmit bursts.

The multiplexing of the phases for different focussing is identical to the SEND board. The power and apodization control is the same.

a) SISEND microprocessor interface

ADDR. (HEX)	FUNCTION
0	TRANSMIT FREQUENCY
1	TRANSMIT FOCUS/POWER/APOD
2	STATUS
3	TRANSDUCER CODE (INPUT)
4	-
5	-
6	ADDRESSING GENERATES MBK 
7	-

	ADDR 0		ADDR 1	ADDR 2
BIT 7 MSB	BS	BURST	POWER 2	X0 SEL LIN 1/LIN 2
6	BS 2	SELECT	POWER 1	DPLR (to TFOC)
5	BS 1	LOWER	POWER 0	BS 5 BURST SELECT
4	BS 0	BITS	APOD 2	BS 4 UPPER BITS
3	C 3		APOD 1	TEST (normally low)
2	C 2	VCO	APOD 1	FLD (fast load)
1	C 1	FREQUENCY	FOCS 1	BMR (beam rest)
BIT 0 LSB	C 0		FOCS 0	BOARD ENABLE

Oscillator-Frequency : (C0 to C3)

TRIM points F → 40 MHz
 7 → $39\frac{1}{3}$ MHz
 0 → 20 MHz

Approx. rule : $f \text{ (MHz)} = 20 + 1\frac{1}{3} \cdot C$

Burst select : (BS0 to BS5)

BS5 = low : Delay increment between transmit-phase equals VCO cycle : "lambda/8" mode.

BS5 = high : Delay increment between transmit-phase equals half VCO cycle : "lambda/4" mode.

For each case 32 possibilities.
 1F and 3F reserved for testing.

Power : (POWER 0 to POWER 2)

7 = max. power
 0 = min. power

Apodization (APOD 0 to APOD 2)

Apodization rule is : $f(n) = 1 - K \cdot \sin^2(n/16)$

APOD	K
0	2
1	1.5
2	0.92
3	0.67
4	0.45
5	0.28
6	0.13
7	0

hamming window

no apodization

Focus (FOCS 0, FOCS 1)

FOCS	TYPE
0	standard aspherical
1	far
2	close
3	curved linear

Board enable

High = enable

Shift/load logic

Clocking : address 06 HEX

Control :

FLD	BMR	FUNCTION
0	0	Load new frame*
0	1	shift 4 beam
1	0	do not use
1	1	shift 1 beam

* : works always in "wide scan" mode as shown in chapter (SCON)

Test

normal state : low

testing : high selects separate address space in the MUX EPROM.

DPLR

controls DPLR bit for TFOC as found on SEND

X0

controls optional linear transducer switchbox

X0 = low : LIN 1

X0 = high : LIN 2

Wide scanning

SISEND works always with "wide scanning".

The position of the first and the last beams relative to the transducer segments is shown in Figure SISEND WIDE SCANNING.

This way, the number of different ultrasound beams is :

$N_b = (N_c - 10) \cdot 2$ (N_c = number of transducer segments)

b) Voltage controlled oscillator

The board uses basically the same circuit as SEND. However, the control-voltage circuit has been changed. The frequency resolution has been reduced to four bits, which is enough for the application.

The basic idea of the control circuit is to directly trim three frequency points and interpolate with the DAC between them. *Figure 23 SISEND VCO* shows the basic circuit.

The most significant controlbit selects the trimming voltages through a CMOS multiplexer. The lower bits go to the DAC. For trimming the following steps are performed :

- 1 Apply the control word F (HEX). This selects the "max" trimmer for the control voltage and switches off DAC (total current on Iout).
The maximum VCO frequency of 40MHz is trimmed.
- 2 Apply the control word 7 (HEX). This selects the "mid" trimmer for the control voltage and still switches off the DAC.
The mid VCO frequency of 29 1/3 MHz is trimmed.
- 3 Apply the control word 0 (HEX). This switches the DAC on, and 7/8 of the reference current flows out of Iout.

For all other control words, the DAC will now perform a linear interpolation between the trim-points. This holds also if the MSB is high, because the "mid" trimmer is used as a DAC reference in this case.

Note that steps 1 and 2 are completely independent. Step 3 depends on 2 and should always be done last.

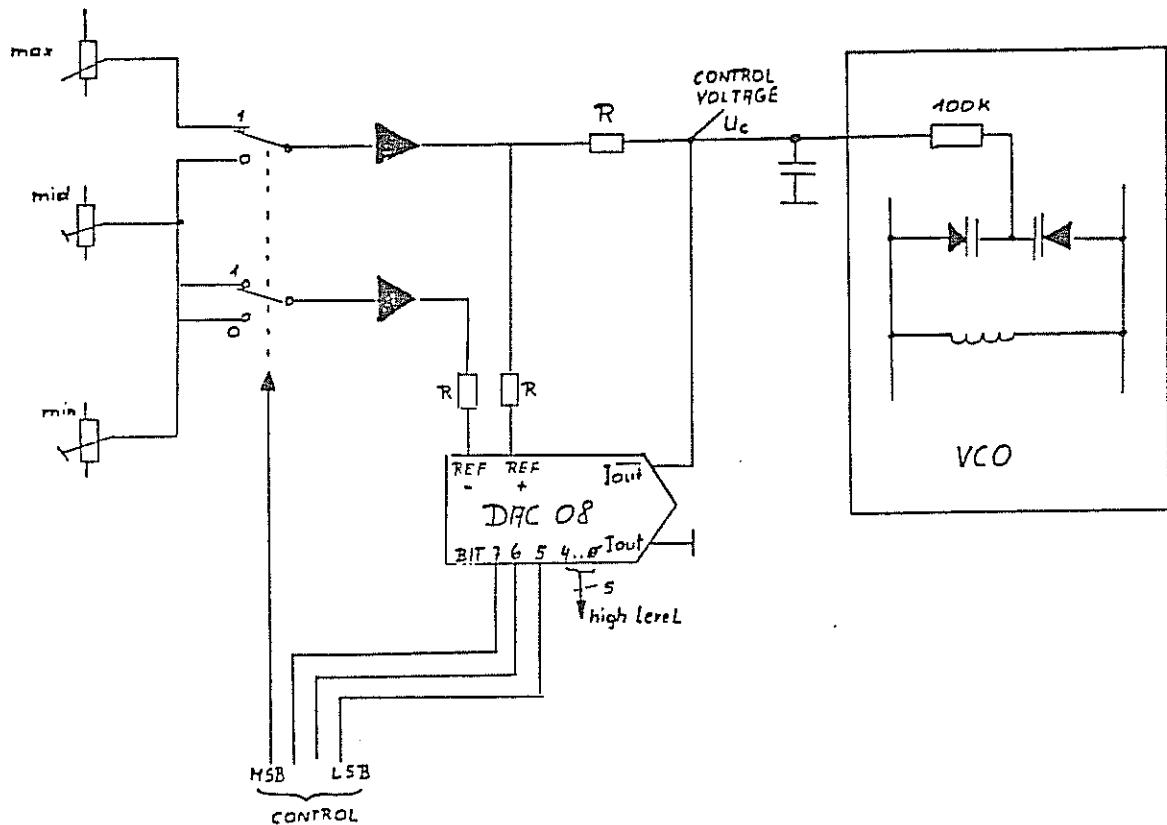
The circuit also has a built-in thermal compensation (by CR 1).

The stability of the trimpoints should be 3% over temperature, while the interpolated values should hold 5% of the typical values.

The control function is approximately linear.

$$f_{out} = 20 + 11/s \cdot N \text{ (MHz)} \quad \text{where } N = 0 \dots 15$$

FIGURE 23 : SISEND VCO



c) Transmit pattern generator

The transmit pattern generator is built from F 299 type shift registers. They are loaded with information coming from a PROM. The PROM can hold 64 different transmit patterns which can be different for "normal" and interlaced beams.

The pattern generator has two basically different operation modes, which are selected depending on BS5. In the 1/8 mode (see *Burst select* above) the shift registers 703/704/705 are used for pattern generation and 602 is used for transmit-phase generation. In ULAP the maximum delay is usually one wavelength. Therefore in a typical ULAP case, one bit of the transmit pattern corresponds to 1/8 wavelength.

In this mode, the delay increments of the transmit-phases equal one VCO cycle.

The delayincrement can be chosen between 25 ns and 50 ns and the "length" of a pattern-bit equals the delayincrement. Pattern length is 24 bits. In the 1/4 mode, two parallel shift register are formed by 703/704/705/601 and 701/702/703. Both are programmed with identical pattern (16 bits long). During shift operation, the first shift register chain is clocked by the true VCO-clock, and the second is clocked by the inverted clock. At the output, the taps are interlaced. This divides the effective delay increment by two. The possible delay increments range from 12.5ns to 25ns and the "length" of pattern-bit equals two delay increments.

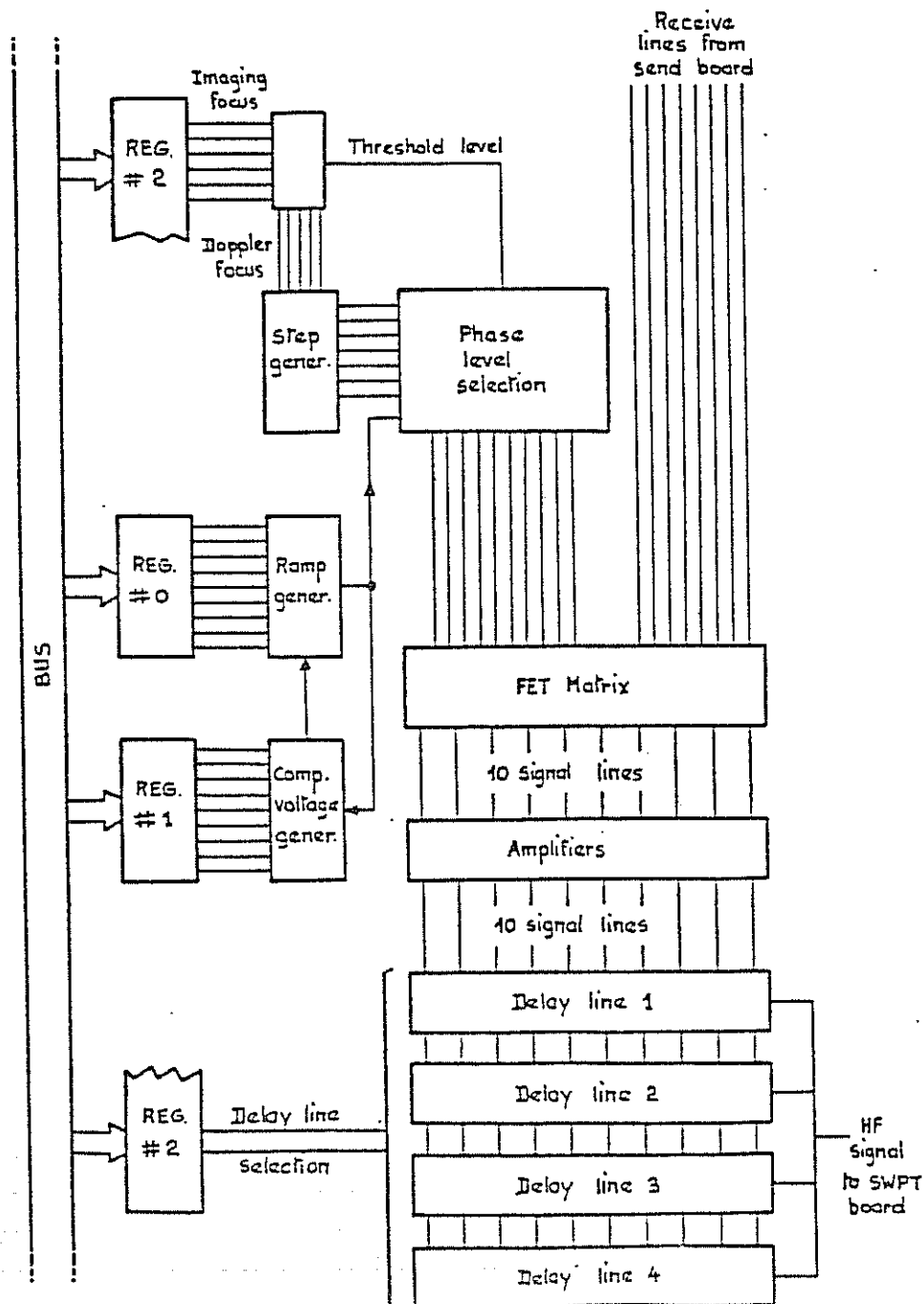
The 1/4 mode is used for high-frequency transmit pulses only, because it offers less resolution for pattern variation.

3.13. T foc p.c.b.

The TFOC board receives the signals, originating in the transducer segments, on the eight receive phase lines.

Combinations of received phase signals are summed onto ten delay line inputs after level adjustments under program control of a ramp voltage. The summing and level adjustment provide dynamic focus of the received signal as a function of depth. Any of four delay lines can be selected by the program to match the frequency of the transducer in use.

3.13.1. TFOC BLOCK DIAGRAM



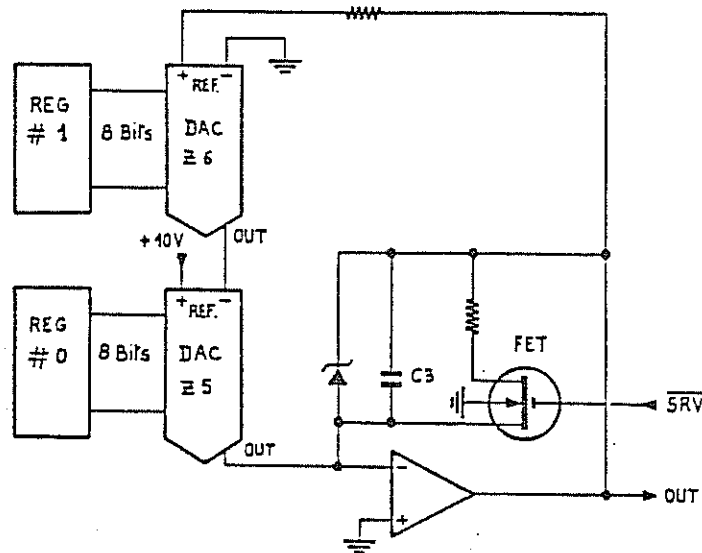
3.13.2. TFOC BLOCK DIAGRAM DESCRIPTION

The block diagram shows the main functional blocks of the board and gives a general idea of the signal flow. The computer bus extension is shown down the righthand side of the figure and it includes the eight data lines used to load data into the control registers, four address lines, and a stobe line.

a) Ramp generator

A ramp voltage, synchronous with each beam, is generated from the control word in register N° 0. The control word is applied to the DAC with its output taken to an op-amp with capacitor feedback. The capacitor is discharged through a FET gated by the send/receive signal SRV*. The DAC reference voltage is supplied by a second DAC converting the control word register N° 1 to a reference voltage. This control word provides the compensation required for curved linear transducers. The ramp generator is disabled during Doppler mode by the DPRL* signal applied to the capacitor discharge FET. A partial schematic of the ramp generator and compensation circuit is shown hereunder.

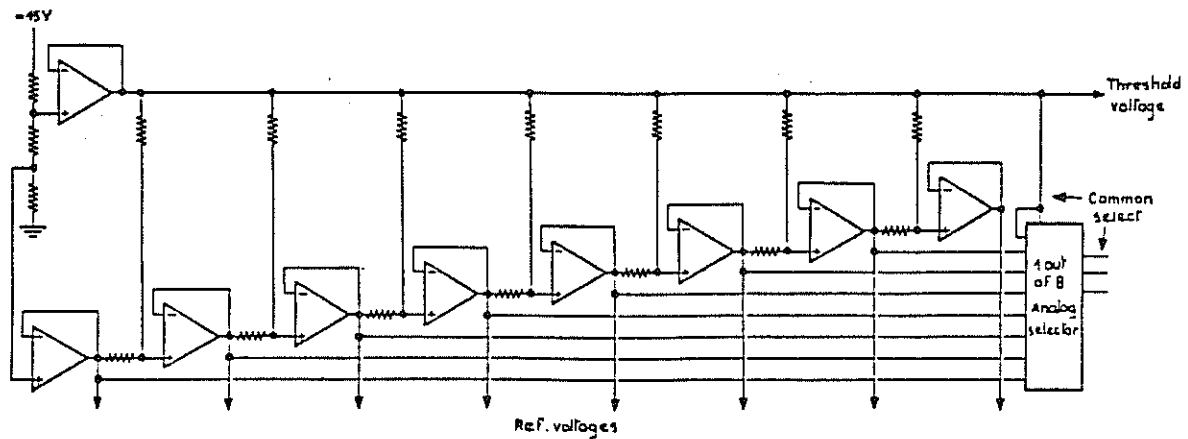
RAMP GENERATOR PARTIAL SCHEMATIC



b) Step voltage generator

This circuit uses a voltage divider followed by voltage follower op-amps in a ladder configuration to produce seven reference voltage selected by the Doppler or Imaging focus control bits of register N° 2. A partial schematic of the circuit is shown here below.

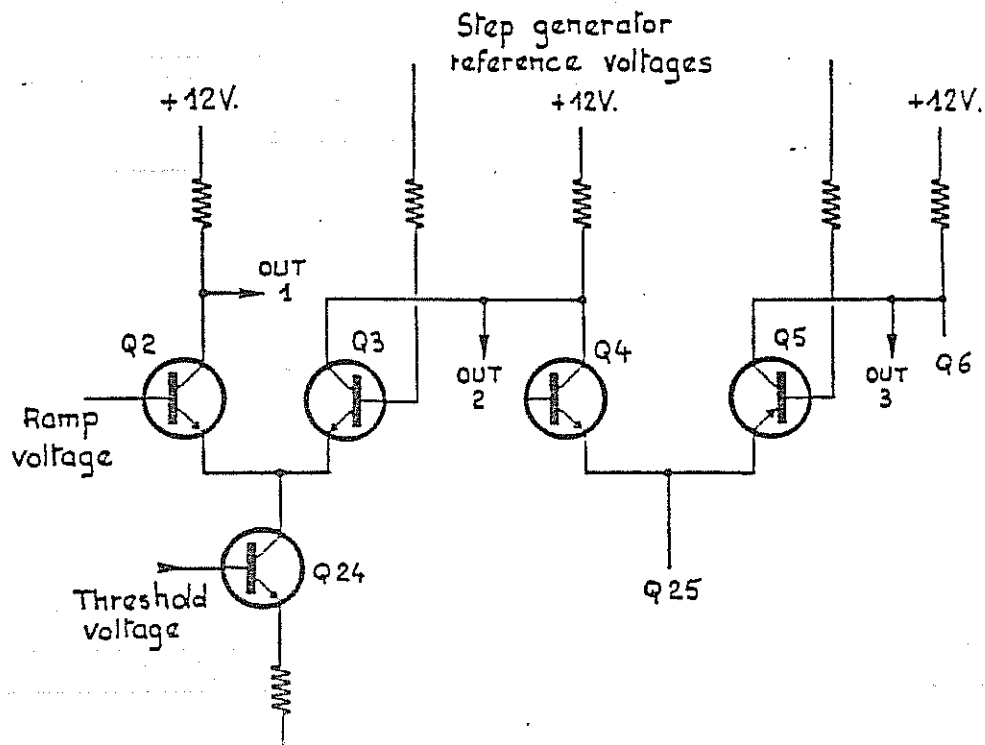
STEP VOLTAGE GENERATOR PARTIAL SCHEMATIC



c) Phase level selection circuit

This circuit, shown in the hereunder partial schematic consists of 11 comparators biased by the threshold voltage set by the Imaging focus or Doppler foccus control word. One input of each amplifier is taken from the ramp voltage and the other is connected to a step on the step voltage generator.

PHASE LEVEL SELECTION PARTIAL SCHEMATIC



d) Summing and level control

The summing and level control block shown in the block diagram uses an array of FETS with their gate level set by the output of the phase selection comparators to control the signals. The signals on the eight input lines are level adjusted and summed (the central signals of a beam are summed with a decreasing number of outer signals to give the concentration required for focus) onto ten signal lines to the inputs of the delay lines.

e) Delay line selection

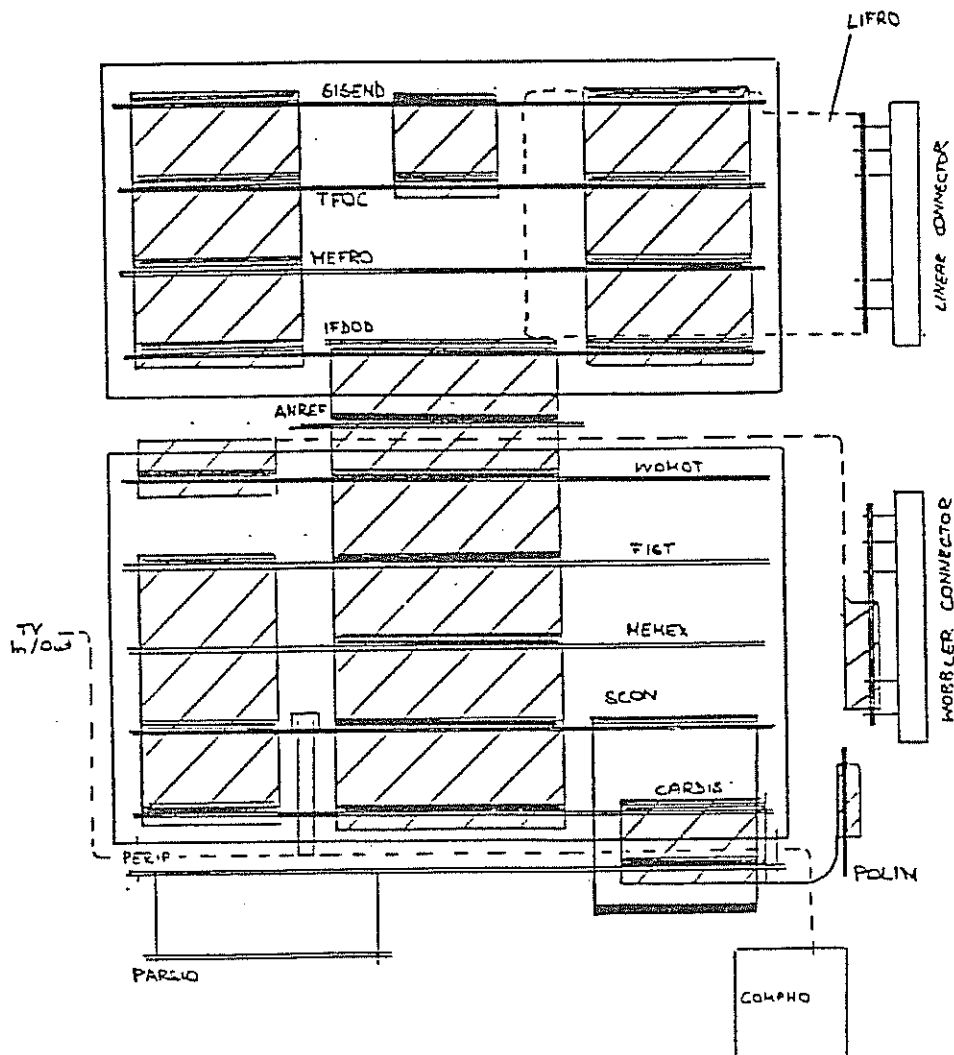
The four delay lines are permanently connected to the outputs of the level control circuit and are selected via their group connections by the register N° 2 control word.

3.14. Cabling

Sigma 1 is in the great lines identical to Sigma 1SC, this is also valid for the cabling. But some points are new :

- Since there are two new boards in the analog box, there are also new cables.
(See total cabling of the two boxes in *Figure SIGMA CABLING*.)
- SISEND is connected to the ULAP-connector by a new flexible print called LIFRO. This one has to be assembled very carefully to avoid damage of the wires.
- The connection between WOMOT/MEFRO and the Wobble-Scanhead is done by INSEC. This board is redesigned, therefore its cabling has changed.

SIGMA CABLING



3.15. Video kit

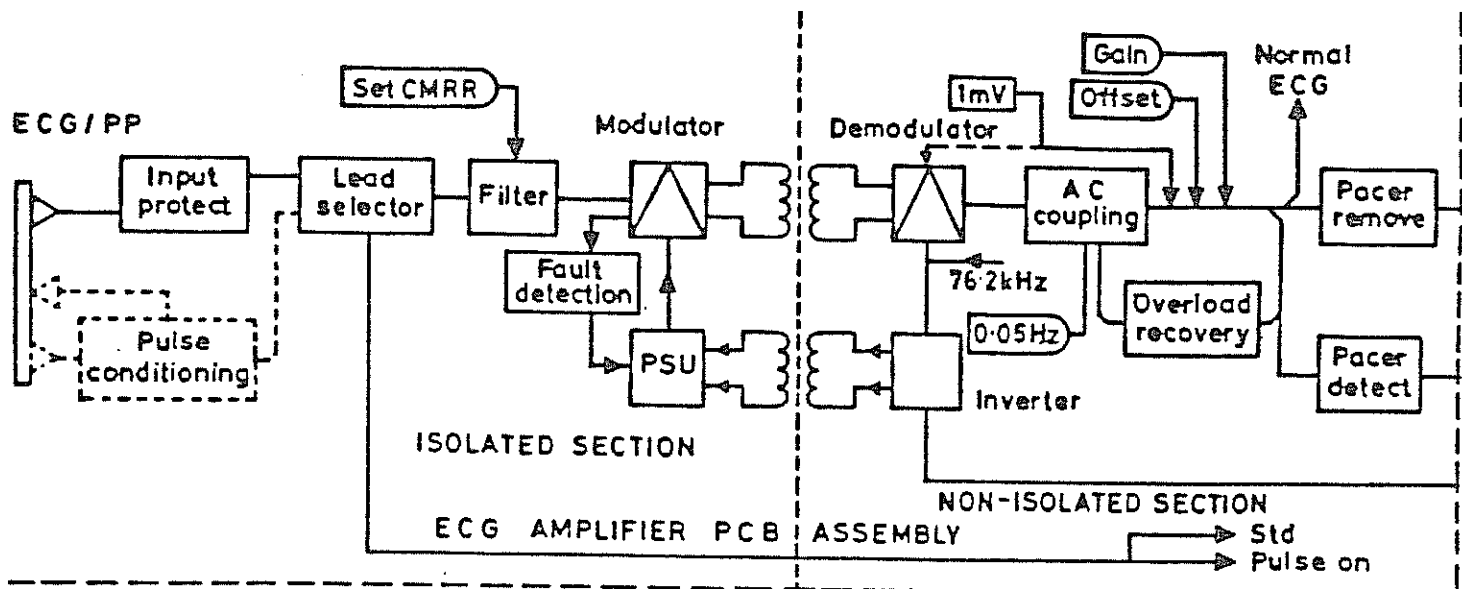
See Appendix (chapter 11).

3.16. Power supply

See Appendix (chapter 11).

3.17. E.C.G. Modul

BLOCK DIAGRAM



See complete schematics in chapter 10.

ANNULAR ARRAY SUPPLEMENT

TABLE OF CONTENTS

Section 1

General information	4
---------------------------	---

Section 2

Transducers	5
-------------------	---

Section 3

Differences between Sigma 1 and Sigma 1 AC	7
--	---

Section 4

AAFRO	9
4.1 General	9
4.2 Transmission processing	10
4.3 Reception processing	11

Section 5

ATFOC	13
5.1 General	13
5.2 AA signals processing	13
5.3 AR signals processing	14
5.4 Interface	14
5.5 Ramp generator	15
5.6 Dynamic aperture comparator	15
5.7 Dynamic focusing comparators	16
5.8 Lin aperture and focus	16
5.9 AA matrix	17
5.10 LIN matrix	18
5.11 Delay lines	19

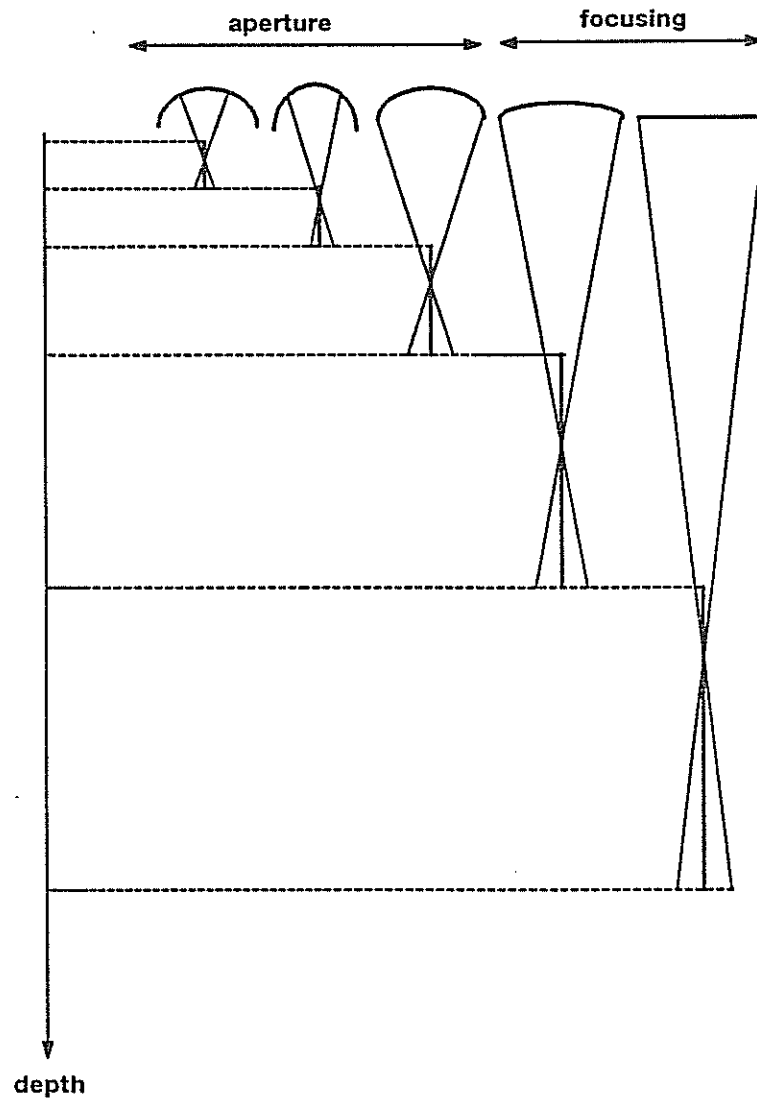
1. General information

Sigma 1 AC provides the following features :

Static aperture and focusing at the transmission

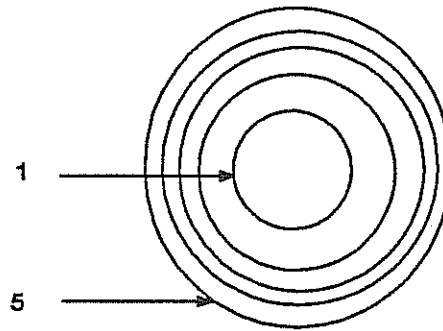
Apodization at transmission: more power is applied on the central ceramic than on the laterals to shift the secondary lobes effect.

Dynamic aperture and focusing at the reception (5 or 7 zones of dynamic aperture and 6 of dynamic focusing).



2. Transducers

The active part of AA transducers is composed of concentric 5 or 7 annular ceramics (in shape of rings).



N o t e

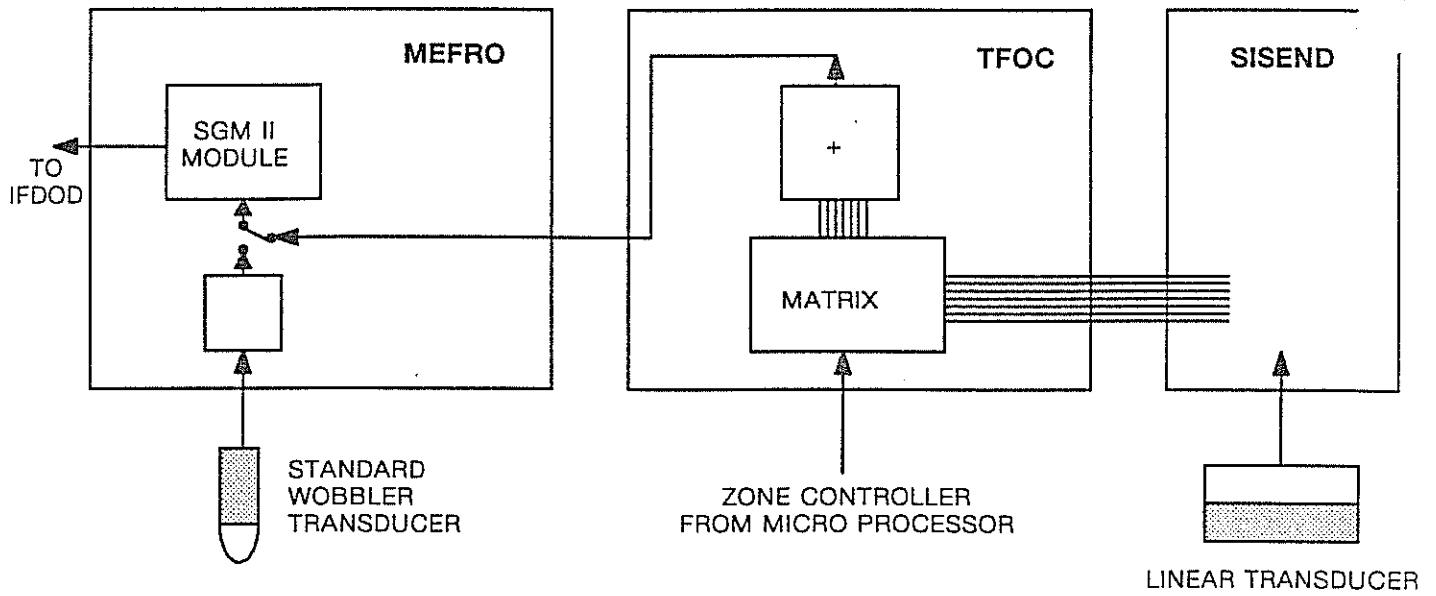
By convention, the ring 1 is the central ceramic and the ring 7 (or 5) is the external one.

The range of AA transducers is the following :

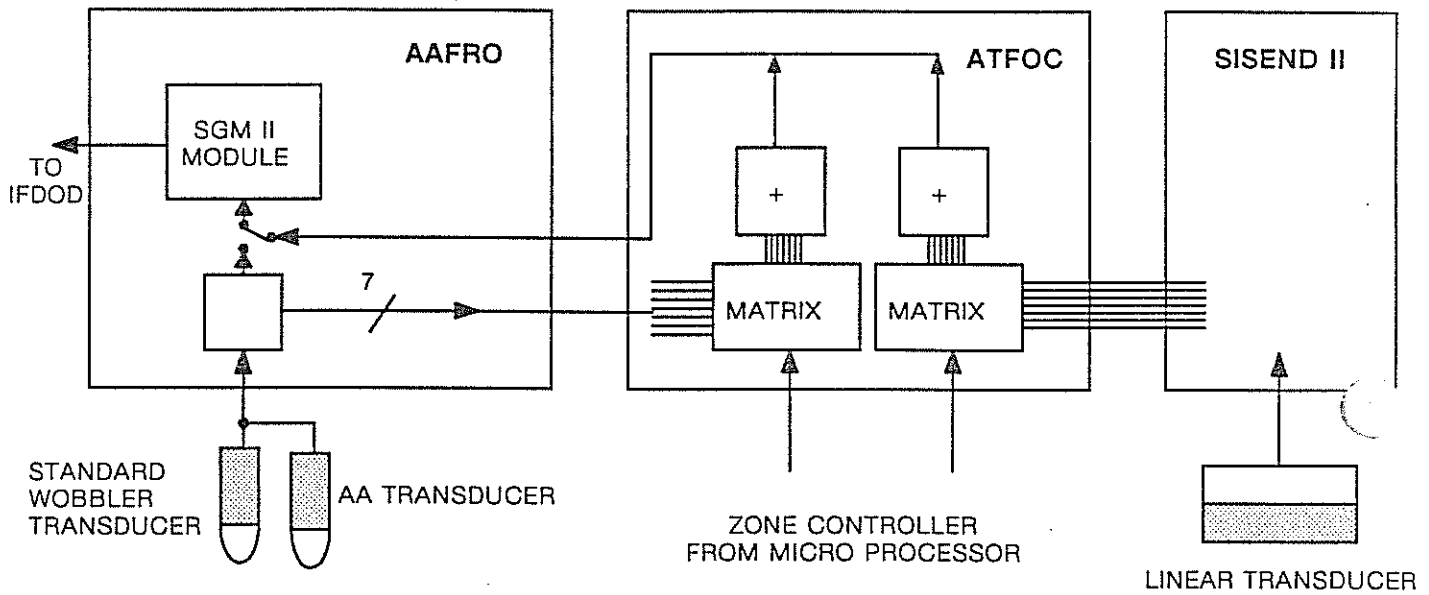
	AA 3.5 MHz B	
	AA 5 MHz B	
	AA 7.5 MHz B	

Another range of AA transducers is presently under evaluation and of course not released yet.

Application : A : Abdominal
B : General purpose
C : Cardiac



Sigma 1 Front end



Sigma 1 AC Front end

3. Differences between Sigma 1 and Sigma 1 AC

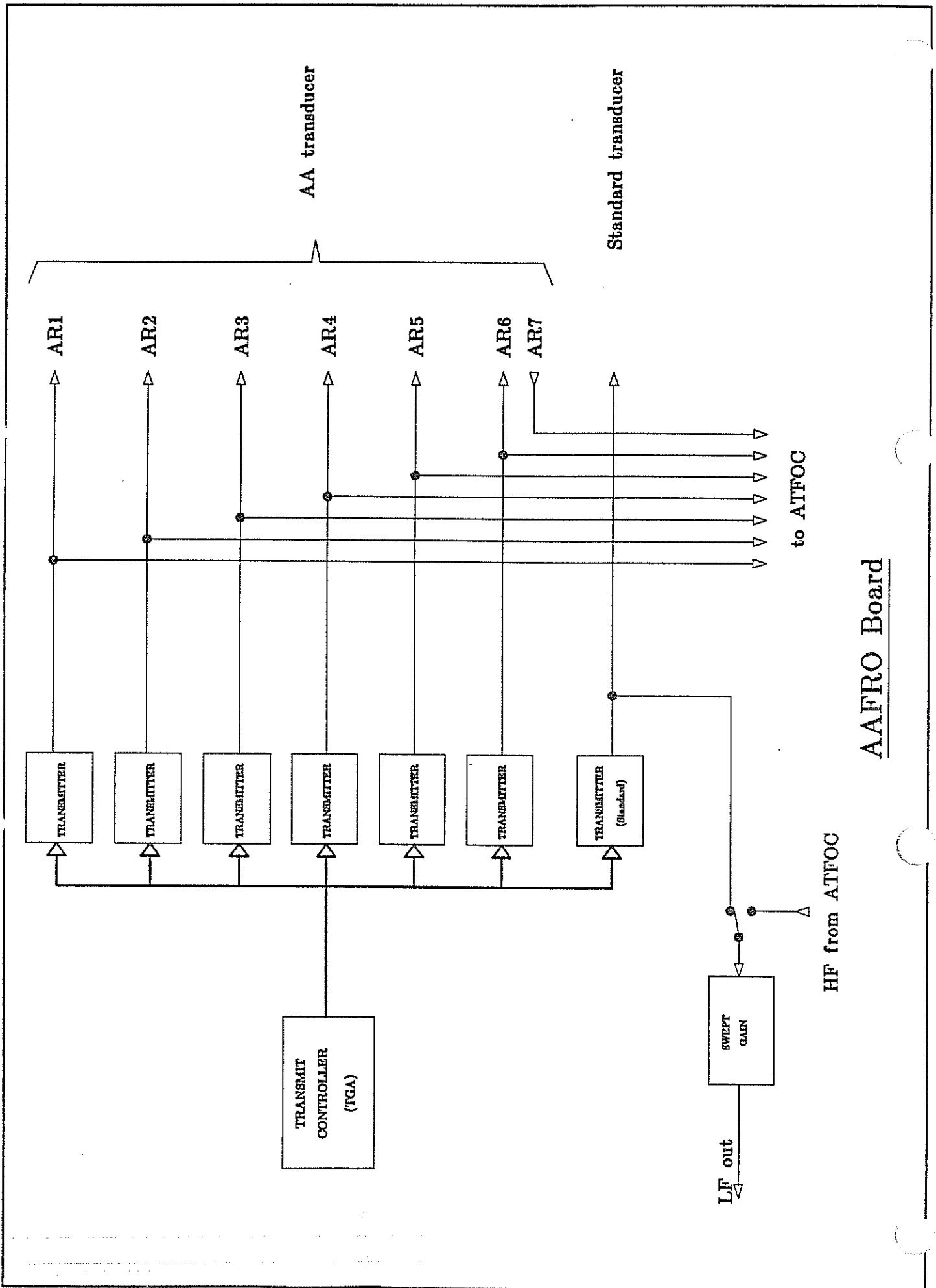
2 boards are completely new :

- . AAFRO (MEFRO B for Sigma 1)
- . ATFOC (TFOC for Sigma 1)
- . New cabling (MASIC)
- . New power supply
- . New keyboard
- . New AA switchbox

The equipment test (AA checkbox) was designed to check AA transducer and signals processing.

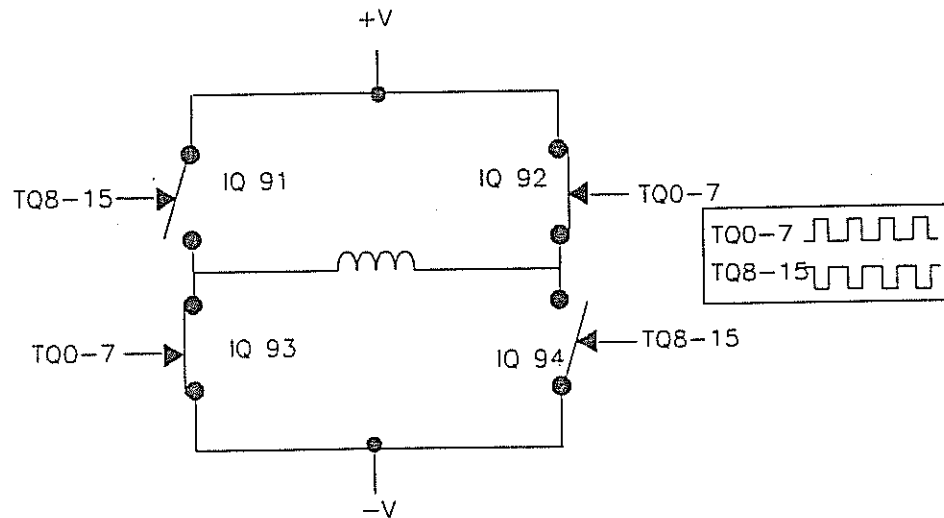
The other boards are taken from Sigma 1 :

- . SISEND II
- . SCON II
- . FIST
- . CARDIS
- . MEMEX
- . WOMOT
- . IFDOD



4.2 Transmission processing

During transmission, the MOS/FET are trimmed by TQ0-7 and TQ8-15 : one pair of FET is closed when the other one is open :

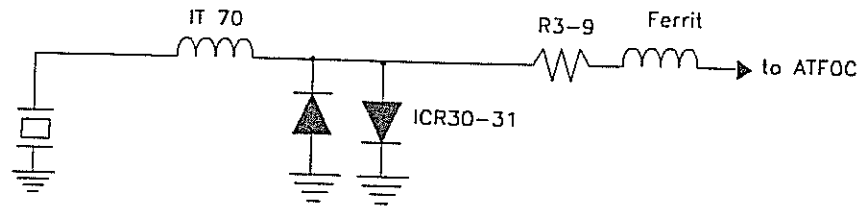


The control is obtained by the variation of the "H" stage power supply. The diodes ICR30 and 31 are protecting the first reception stage of ATFOC during transmission and REL 2 switches either to wobbler or mono transducer.

The AAFRO p.c.b. contains a VCO working identically as the VCO on SISEND II (between 20 and 40 MHz) : SRV controls the VCO running and END stops the VCO Operation.

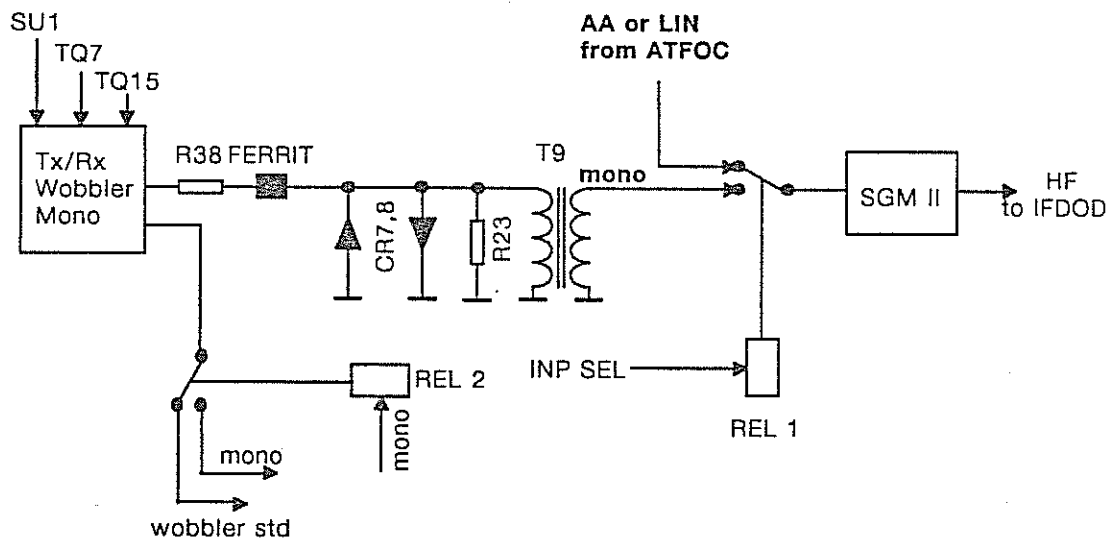
4.3 Reception processing

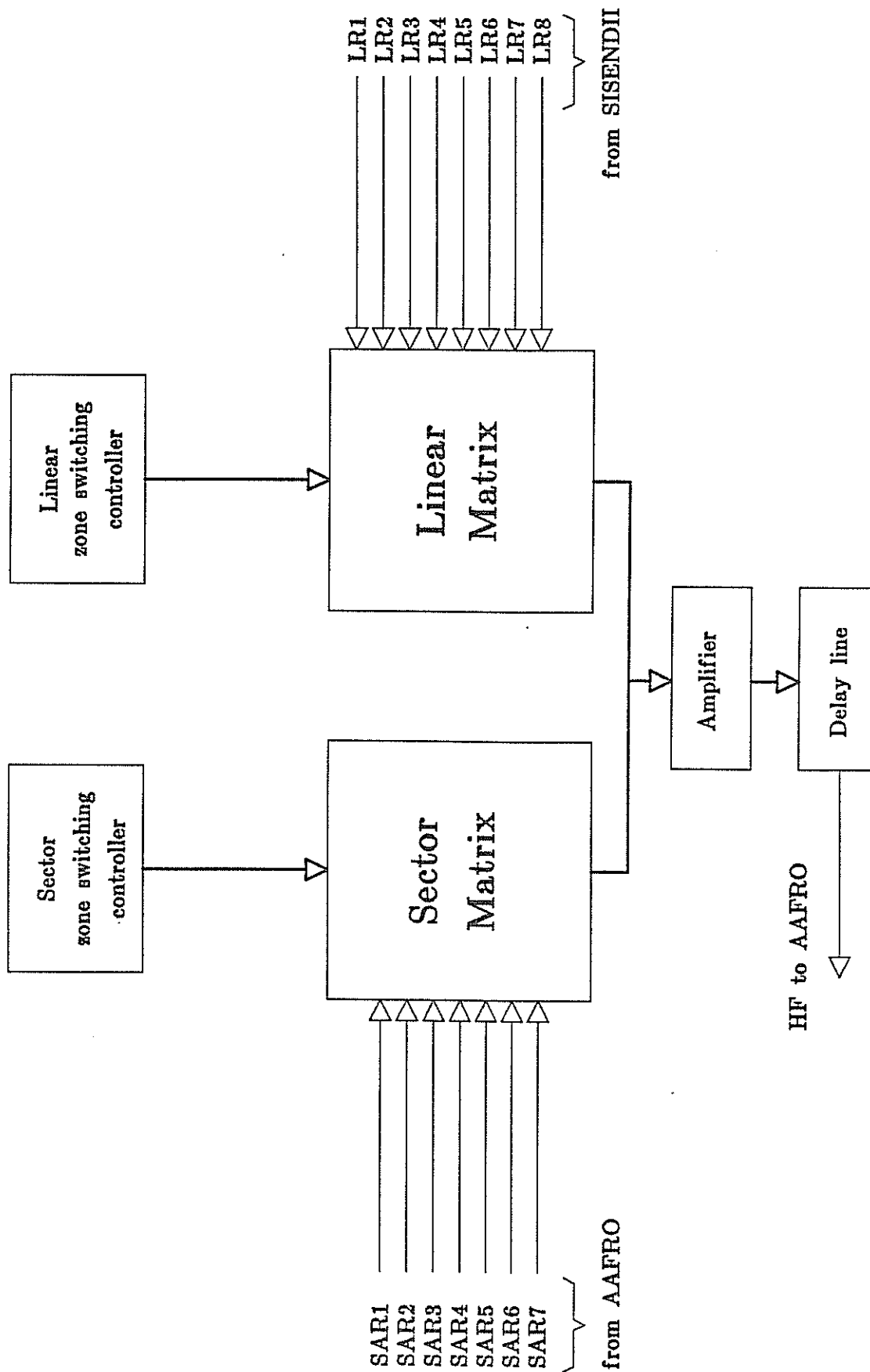
During reception, IQ93 and IQ94 (triggered by the TGA) short circuit IT70. The received signal is sent to ATFOC via R3 to R9.



The HF signal (SHMD, SHMD RET) coming back from ATFOC is amplified in a sweep gain module (SGM II). The gain is adjusted according to the selected frequency and depth.

The selection of the received signal (AA, LIN or std wobbler) is done by REL 1 which switches on the appropriate channel. the LFOUT signal (HF, HFRET) is then sent to IFDOD.





ATFOC Board

5. ATFOC

5.1 General

The ATFOC board receives :

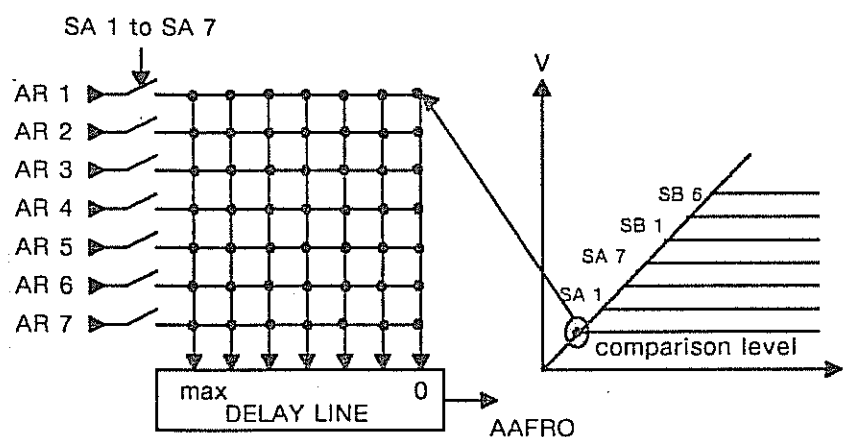
- . The eight received phase lines from SISEND (Linear transducer).
- . The seven received signals from AAFRO (AA transducer).

Each of them is sent on two separate matrixes (one for AA and the other one for linear) controlled by a zone switching controller and then delayed. The delay and summing provide dynamic focusing and aperture as a function of depth. The HF signal is sent back to AAFRO in order to be amplified.

5.2 AA signals processing

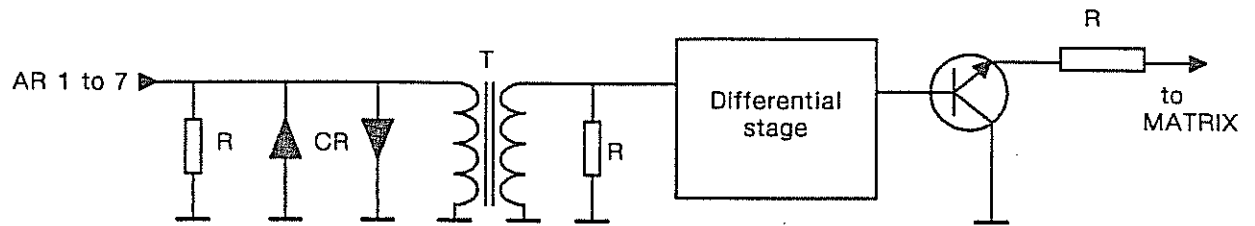
The ATFOC AA part works in two different steps :

1. Dynamic aperture.
The central ceramic is first positioned in reception (AR1) then the first and the second (AR1 + AR2) and so on to have all the ceramics in reception (AR1 to 7). This operation is carried out in the AA matrix.
2. Dynamic focusing
Dynamic focusing is obtained by applying delays on each channel. The commutation is performed by coincidence of a ramp voltage (triggered by SRV) and a comparison voltage generated by the microprocessor (according to depth, frequency and focus).



5.3 AR signals processing

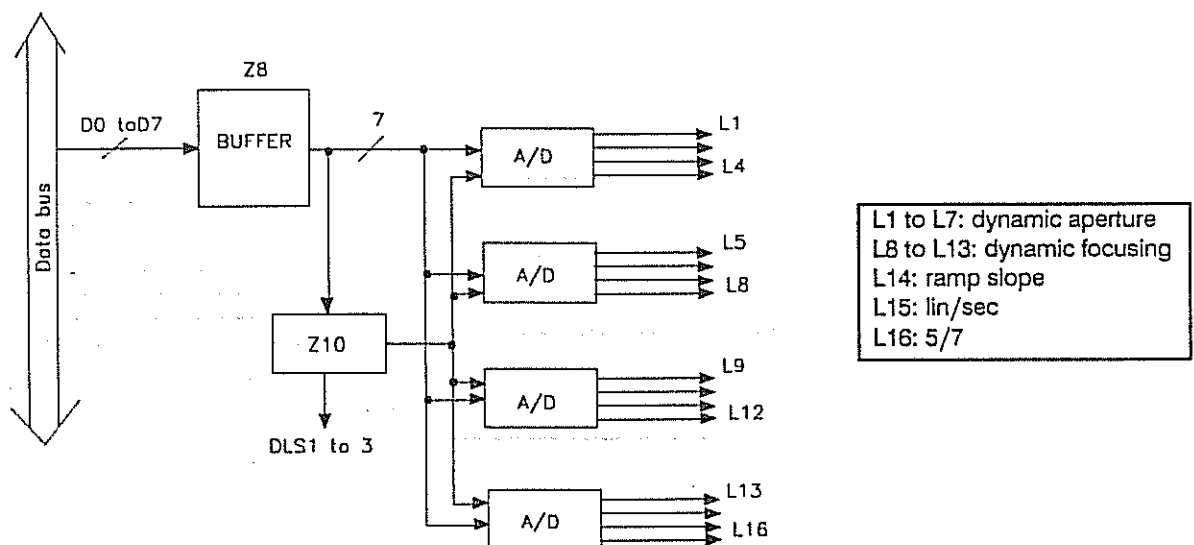
Each AR signal is limited (CR) impedance matched (T) and amplified in a low capacitor differential stage which remove also the Miller effect (high Z_i , low Z_o) before being sent on the AA matrix.



The 5/7 signal earthes the AR1 and 7 when operating with a 5 rings AA transducer.

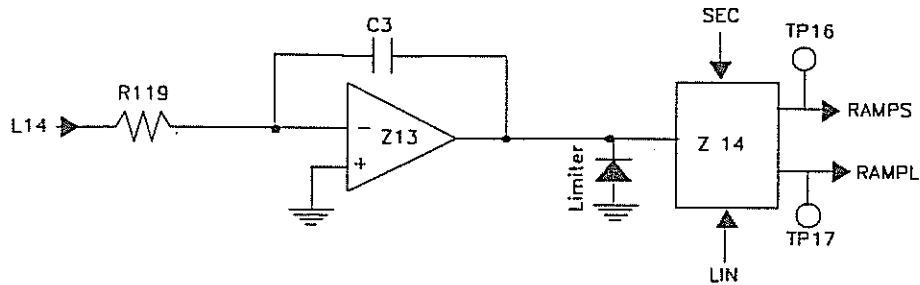
5.4 Interface

The data bus (d0 to d7) is at first sent to a buffer (Z8) and then to four A/D converter (Z1 to 4) in order to generate the comparison levels and command signals used to trigger the matrix. Each A/D converter has four outputs which are adapted by an amplifier stage (Z1 to Z8). L1 to L13 are the comparison voltages selected according to the chosen depth. Z10 is a latch which is used as a pointer for the A/D converter. Then Z10 selects by DLS1 to 3 the delay line(s) according to the transmitting frequency.



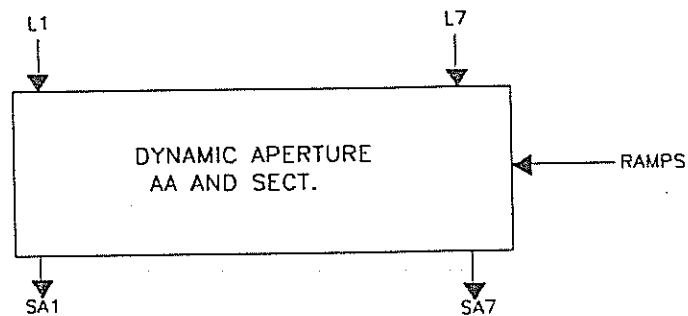
5.5 Ramp generator

The ramp generator is performed by an Integrator (Z13) triggered by L14. The integrator circuit is composed of Z13, C3 and R119 and the output signal is limited to 5.5 V by Q74 and R118. SRV signal discharges C3 at the transmission end to begin the ramp generation. RAMPS and RAMPL are sent to the sector and linear matrixes (TP16 and 17).



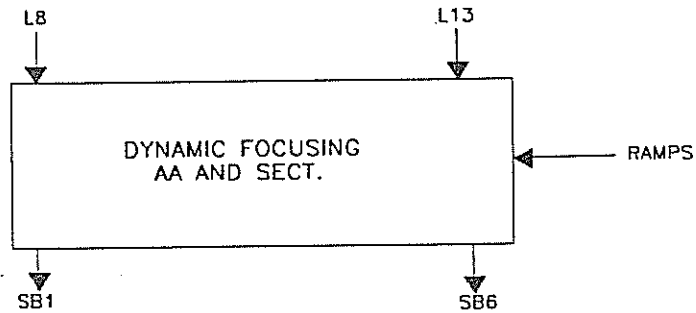
5.6 Dynamic aperture comparator

The L1 to L7 signals are compared to RAMPS in the comparator stages (Q22 to Q42). When one of the input Ln is in accordance with the programmed level, the corresponding transistor let the SAn signal flow to the AA matrix to open the corresponding ceramic.

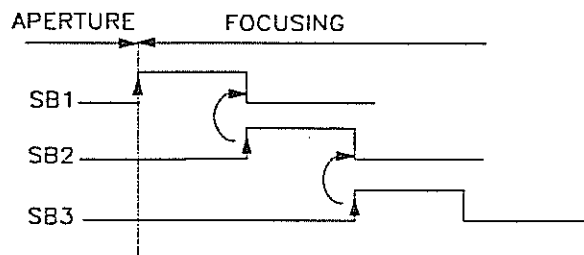


5.7 Dynamic focusing comparators

As soon as the last ceramic is opened (L7, SA7), Q49 short circuits the dynamic aperture comparators (except SA4 which is always active).

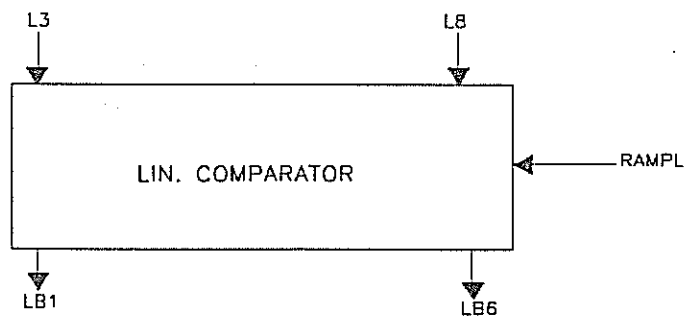


By connecting together the collector of the different stage transistors (ex : Q8 and Q7), SB2 is activated by the \bar{V} of SB1, etc. ...



5.8 Lin aperture and focus

First L1 and L2 are sent to the comparator stage (Q68, Q72) to generate the aperture orders (LA1, LA2). Then focusing is applied (L3 to L8, Q50 to 66, LB1 to LB6).



5.9 AA matrix

The AA signals are first adapted and limited. 5/7 (L16) signal earthes AR1 and AR7 in case of using a 5 rings ceramics. SA1 to 7 activate the Q38 to 43 transistors for the aperture. Then SB1 to 6 selects the received channels on which delay has to be applied by the delay lines (N0 to N18) for the dynamic focusing. In order to have a smooth switching commutation inside the matrix, the AR signals are divided by 3 (R83 to R104).

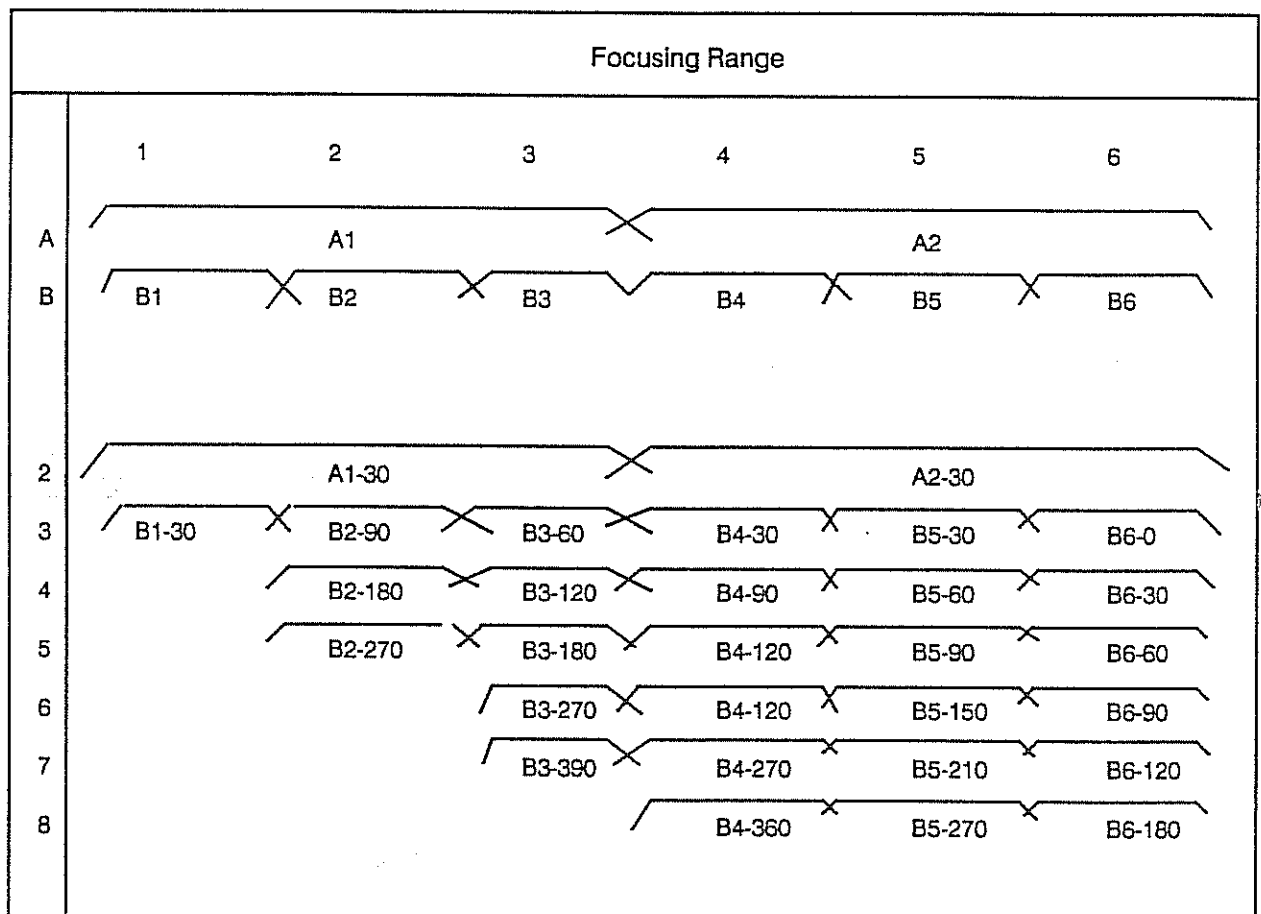
		Element No (SAR1 to SAR7)						
Focus range		1	2	3	4	5	6	7
SA1	1	18	-	-	-	-	-	-
SA2	2	18	15	-	-	-	-	-
SA3	3	18	15	12	-	-	-	-
SA4	4	18	15	12	9	-	-	-
SA5	5	18	15	12	9	6	-	-
SA6	6	18	15	12	9	6	3	-
SA7	7	18	15	12	9	6	3	0
SB1	8	15	13	11	9	7	5	3
SB2	9	12	11	10	9	8	7	6
SB3	10	9	9	9	9	9	9	9
SB4	11	6	7	8	9	10	11	12
SB5	12	3	5	7	9	11	13	15
SB6	13	0	3	6	9	12	15	18

Element	1	2	3	4	5	6	7	8	9	10	11	12	13
1													
2													
3													
4													
5													
6													
7													

5.10 LIN matrix

LB1 to LB6 activate the LIN Matrix commutation. PRO to 7 (from SIDEND) are sent to the delay lines (DL1 = 199.8 ns, DL2 = 333 ns, DL4 = 468.9 ns). In order to have smooth switching commutation inside the LIN matrix, the RP2 to 7 signals are divided by 3 (R196 to R111). RP0 and 1 are used for dynamic aperture (2 zones).

		Element No							
Focus		1	2	3	4	5	6	7	8
25 mm	1	0	30	120	—	—	—	—	—
32 mm	2	0	30	90	180	270	—	—	—
50 mm	3	0	30	60	120	180	270	390	—
70 mm	4	0	0	30	90	120	210	270	360
100 mm	5	0	0	0	30	60	90	120	180



5.11 Delay lines

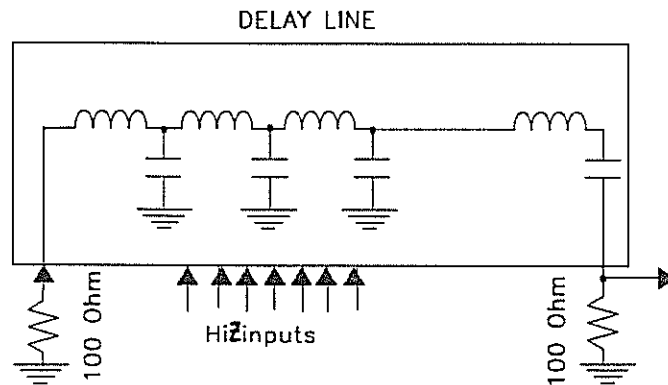
DLS1 and DLS3 signals enable the delay lines according to the dynamic focusing .
 N0 to N8 at the delay line inputs are the outputs of the AA matrix (if RAMPS =1) or LIN matrix (if RAMPL=1).
 LIN signal short-circuits N3,N5,N15 and N18 in case of linear transducer, and SEC short-circuits N4 and N1 in case of 5 rings AA transducer.

Note that N0 is the input without delay to be applied.

N0 to N18 are delayed and summed in DL1 to DL3 (TP15), then impedance adapted (T8) and finally gain adapted (TP 16). SHMD is the output signal to be send to AAFRO.

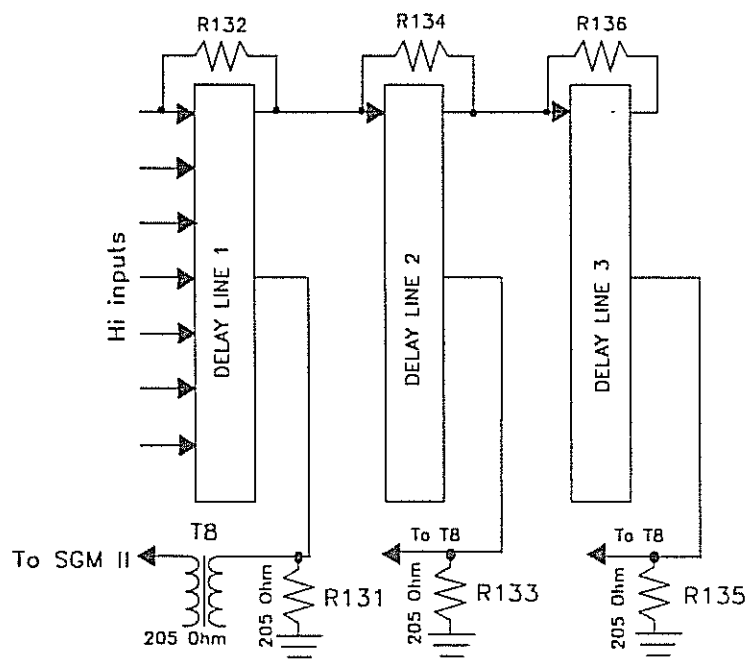
NOTE

To operate in right conditions, the delay line must be terminated by a 100 Ohm load.

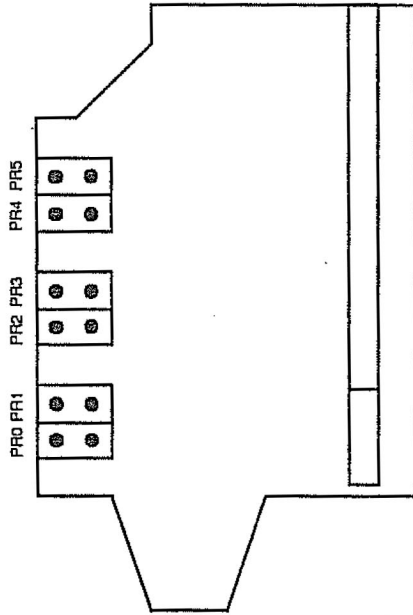


The Hi inputs are the common stages Q104 to Q120. The 100 Ohms input loads are R132, R134 and R136. The output 100 Ohms loads are R131, R133 and R135 (205 Ohm) in parallel with T8 (205 Ohm).

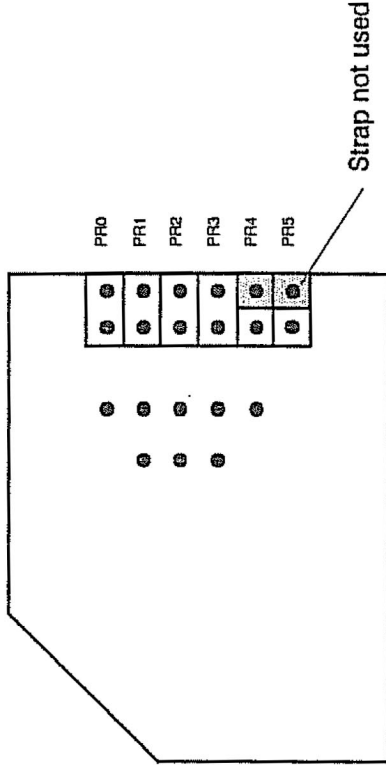
The outputs of the delay line are voltage limited before triggering the adaptation stage.



TRANSUDERS CODDING



ANNULAR TRANSDUCER



WOBBLER TRANSDUCER

PART NUMBER	TRANSDUCER TYPE	STRAP ON
597 430	Annular Array Transducer 3.5 MHz type A	PR1 PR2 PR4
594 970	Annular Array Transducer 3.5 MHz type B	PR0 PR2 PR4
597 740	Annular Array Transducer 5 MHz type A	PR0 PR1 PR2 PR3
592 080	Annular Array Transducer 5 MHz type B	PR0 PR1 PR2 PR3
597 120	Annular Array Transducer 7.5 MHz type B	PR3 PR4

PART NUMBER	TRANSDUCER TYPE	STRAP ON
856 150	Wobbler Transducer 3.5 MHz type A	PR0
581 410	Wobbler Transducer 3.5 MHz type C	PR1
589 330	Wobbler Transducer 3.5 MHz type D	PR0 PR1 PR3
856 010	Wobbler Transducer 5 MHz type B	PR2
583 170	Wobbler Transducer 7.5 MHz type B	PR0 PR2
598 880	Wobbler Transducer 7.5 MHz type V	PR0 PR3 PR4



Adjustment and Calibration

4. ADJUSTMENT AND CALIBRATION (UNIT OPEN)

4.1. Introduction

This chapter describes the adjustment and calibration of an open unit. It is mandatory to perform a complete unit check and a safety check afterwards (See chapter 5).

Functional safety is ensured by performing the relevant test in a professional manner.

If the unit is opened, it is imperative to perform all safety and functional checks (described in chapter 5 of this manual) after reassembly, to ensure that functional safety demands are met.

Caution : CMOS components : See chapter 2.2. page 5.



4.2. Calibration equipment

4.2.1. TEST OF RECEIVE ELECTRONIC (common to linear and sector)

*You need : Open machine
Sigma I Sector Checkbox
Oscilloscope*

- Connect the transducer cable as well as the TM/Doppler connector of the checkbox to the Sigma 1.
- Select the following settings on the checkbox :
 - ECG off
 - XMIT off
 - MODE 4
 - PULSE LENGTH F
 - TRANSDUCER CODE FD (= Wobbler 3.5MHz C)
 - FREQUENCY 3.5MHz

a) Control of TGC

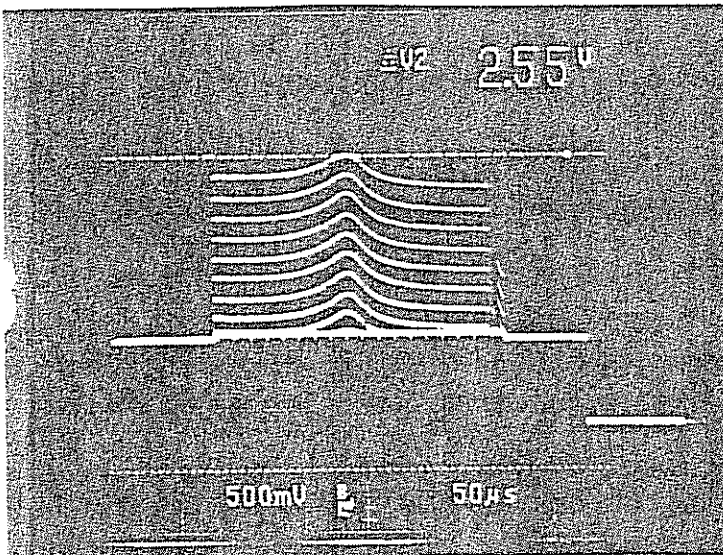
- Press TM
DEPTH 4
FAR
- Set TGC1 ... TGC 9 at maximum
- Observe the GCV voltage (available on the checkbox) on the oscilloscope (1V/div, 50 micro-sec/div, synchronized on SRV  (available on the checkbox)).
- Control on the scope that $GCV = 4.0V \pm 200mV$ for TM gain min
 $= 5.0V \pm 200mV$ for TM gain max
- Verify that the time which elapses between  and the beginning of GCV reset is included in the interval 239...248 us.
- Set TCG 2, TCG 3 ... TCG 9 at minimum.
- Adjust TCG 1 to suppress the break of the first zone.
- GCV must be absolutely constant. Any slope must be corrected on the CARDIS board with R 166.
- Control on the scope that $GCV = 0.60V \pm 0.1V$ for TM gain min.
 $= 3.60V \pm 0.1V$ for TM gain max.

b) Control of the log amp tuning and overall gain calibration

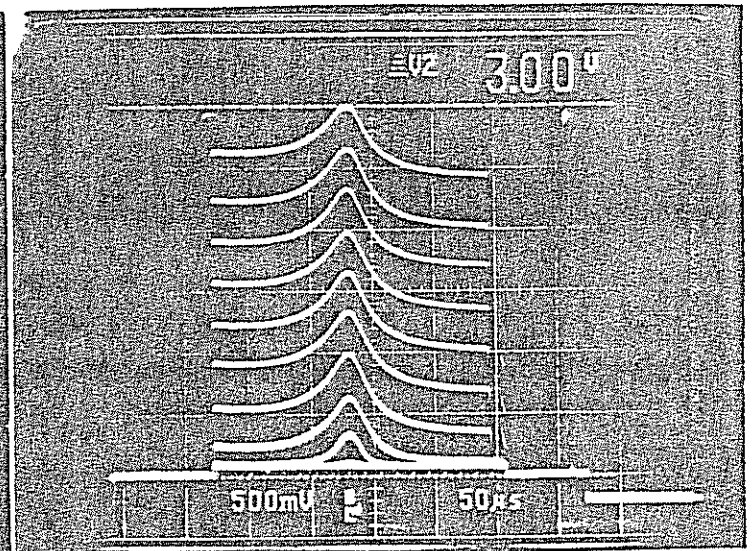
- All other settings being maintained, set :
TM max
Reject max
- Observe the TMZ output (available on the checkbox) on the scope (500mV/div, 50 micro-sec/div synchronized on SRV—).
According to the jumper on the CARDIS board, there are 2 possibilities :

	POSITION B	POSITION A
White level	$2.77V \pm 100mV$	$3.40V \pm 100mV$
Black level	$1.02V \pm 100mV$	$0.00V \pm 100mV$
Blank level	$0.40V \pm 100mV$	$-0.25V \pm 100mV$

- Set Reject min
Enhance 0
- Adjust the TM Gain to have the max of TMZ at 2.55V (2.84 V with jumper in position A).
- Observe the GCV voltage on the scope (500mV/DIV, 50 micro-sec/div, synchronized on SRV —). It should be at $2.00V \pm 200mV$.
- Select the mode 0 of the checkbox and observe again the TMZ output on the scope (500mV/div, 50 micro-sec/div, synchronized on SRV—).
You should see 9 equally spaced curves and the top of the 10th curve should be almost distinguishable.



Jumper in position B

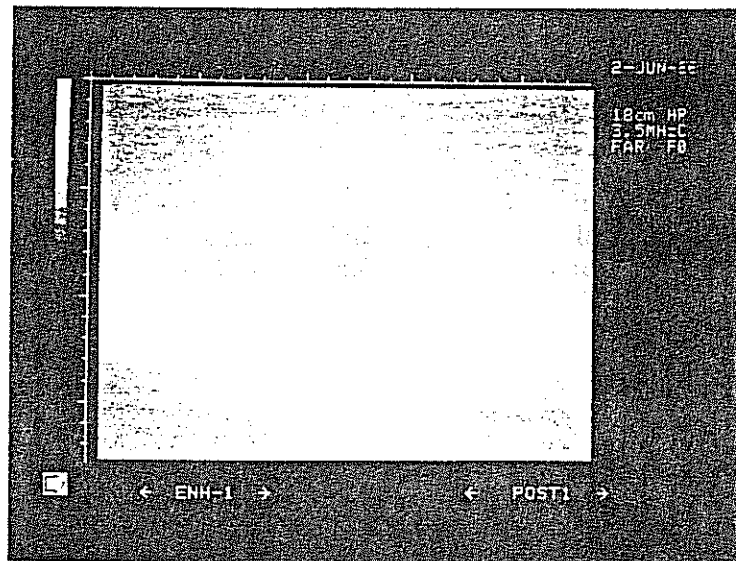


Jumper in position A

- Select again the mode 4 of the checkbox.
- Choose Enhance -1 (= ACG on).
- The top of the curve should be at $2.0V \pm 100mV$ (2.12V with jumper in position A).

c) Control of Tracking Filter Tuning

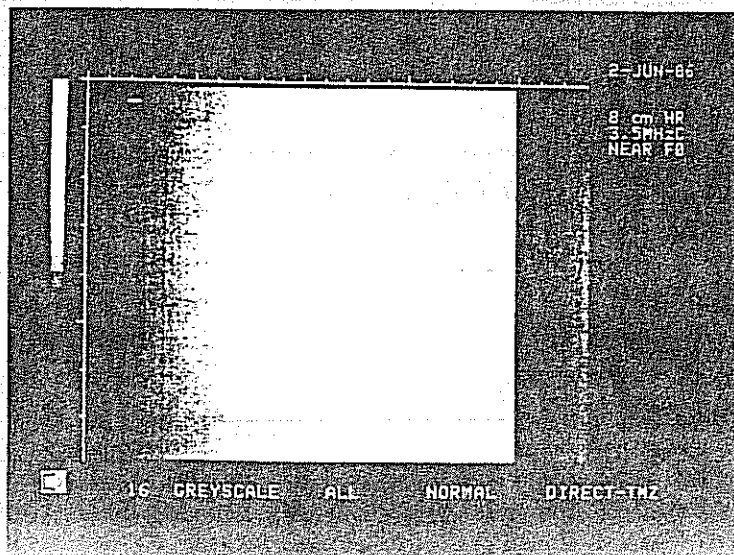
- All the setting being maintained, observe the image on the SIGMA 1 TV monitor. The center of the max must lie at about 9.5cm (± 0.5 cm).




- Select Frequency 5MHz on the checkbox.
- Press DEPTH 1
NEAR
- Observe the TV monitor. The max must lie at about 6.4 cm.

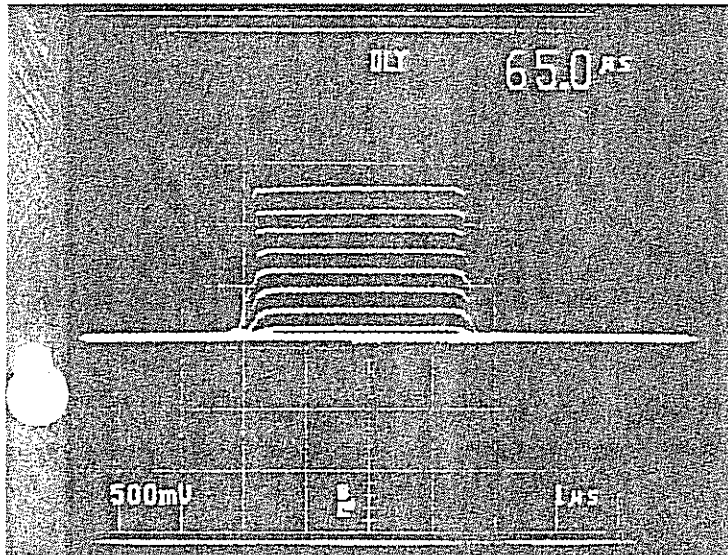
d) Control of the Transfer of the Digital Part

- Set normal TM (white on black)
- Press TM
POST 4
SET T GREYSCALE ALL
- Observe the TV monitor. Make sure that all the bits of the AD converter are present (smooth picture).
- Control the dynamic range of the AD converter on the FIST board. With a digital voltmeter you must find 3.00V (± 0.01 V) at TP 10.

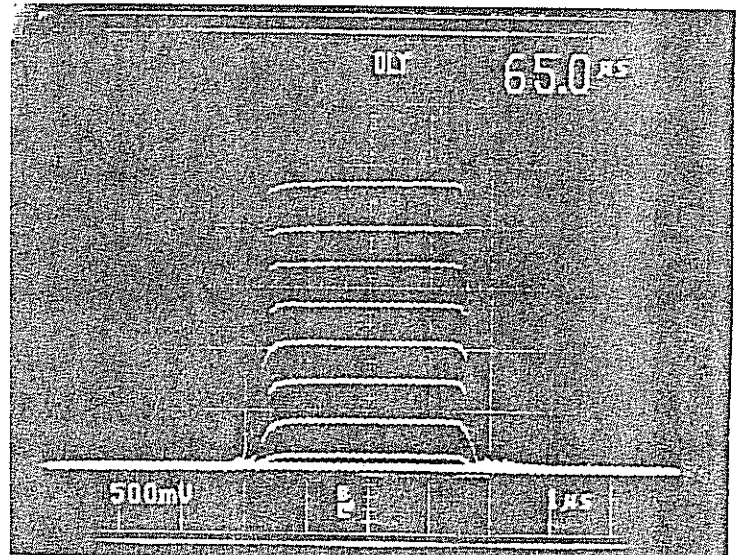


e) Control of the pulse Shape

- Select the following settings on the checkbox :
 MODE 6
 PULSE LENGTH F
 FREQUENCY 5MHz
 (ECG off)
 (TRANSDUCER CODE FD)
- Press TM
 DEPTH 4
 NEAR
 SET T DIRECT-TMZ
- Press Enhance = 0
- Adjust TM gain at 1.7V (scope at 500 mV/div, 50 micro-sec/div, synchronized on SRV ).
- Observe the TV monitor and place the pulse at depth of 5cm with the DEPTH potentiometer of the checkbox.
- Observe the TMZ voltage on the scope (500 mV/div, 50 micro-sec/div).
 The 8 curves should look like those of the photo below, without over-or undershot and with fast rise and fall time.



Jumper in position B



Jumper in position A

4.2.2. CONTROL OF THE SEND FREQUENCY TUNING

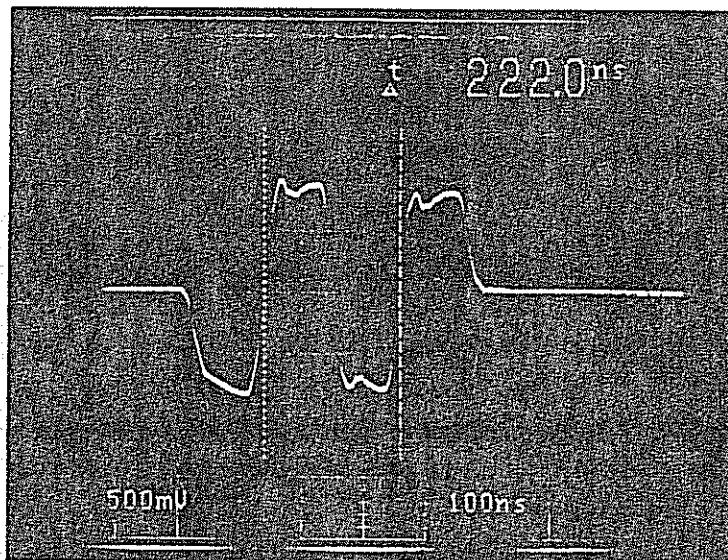
*You need : Open or closed machine
Sigma 1 Sector Checkbox
Oscilloscope
50 Ohm termination*

a) Control of the frequency tuning

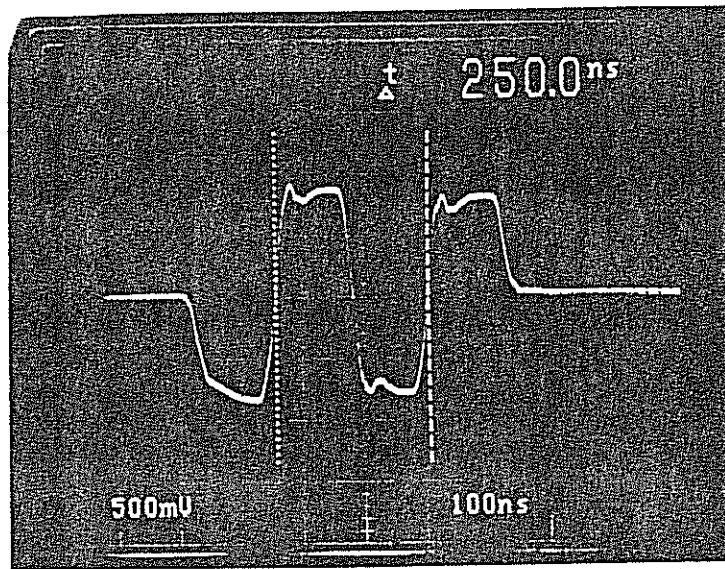
- Select XMIT ON on the checkbox.

Connect the transmission output of the checkbox to an oscilloscope with a coax cable and 50 Ohm termination. Observe the pulse on the scope (500mV/div, 100 ns/div, synchronized on SRV \rightarrow). It must be clean without overshoot, undershoot or oscillating tendency. Within, the measurement accuracy you should find the indicating time interval between the two markers.

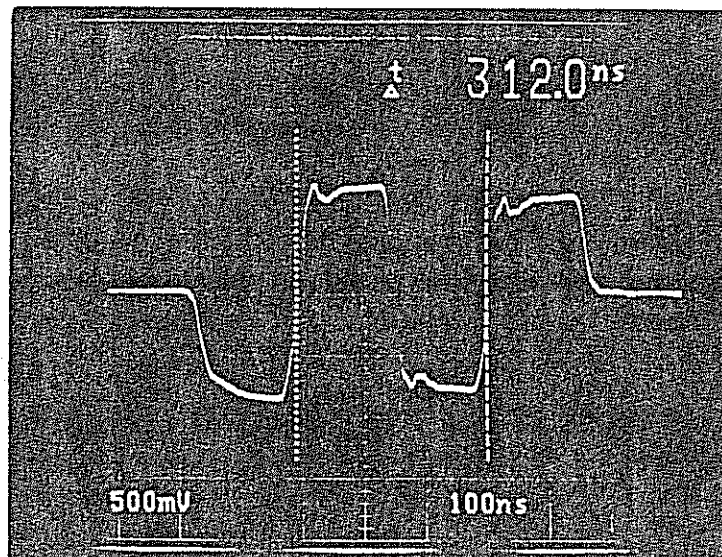
- Press 2D
DEPTH 3
NEAR



- Press DEPTH 3
FAR



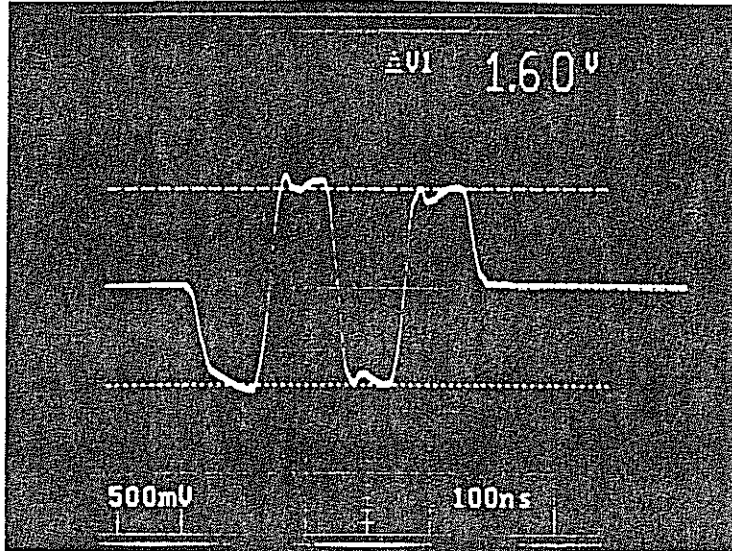
- Press DEPTH 4
NEAR



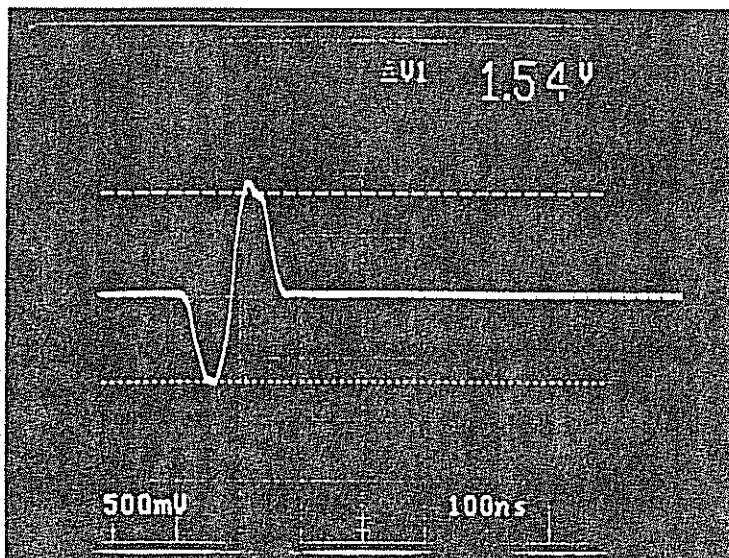
b) Control of the pulse amplitude

- Press DEPTH 3
NEAR

- Measure the peak to peak voltage of the pulse. Within $\pm 0,1V$, you should find the indicated one.



- Press DEPTH 1



c) Control of the monochannel access

- Connect the monochannel output of the Sigma 1 to an oscilloscope with a coax cable and 50 Ohm termination.
- Press DEPTH 3
NEAR
TM
SET TM MONO
- Observe the pulse on the scope (20V/div, 200 ns/divsynchronized on SRV_). It should look like the one depicted on the previous page.

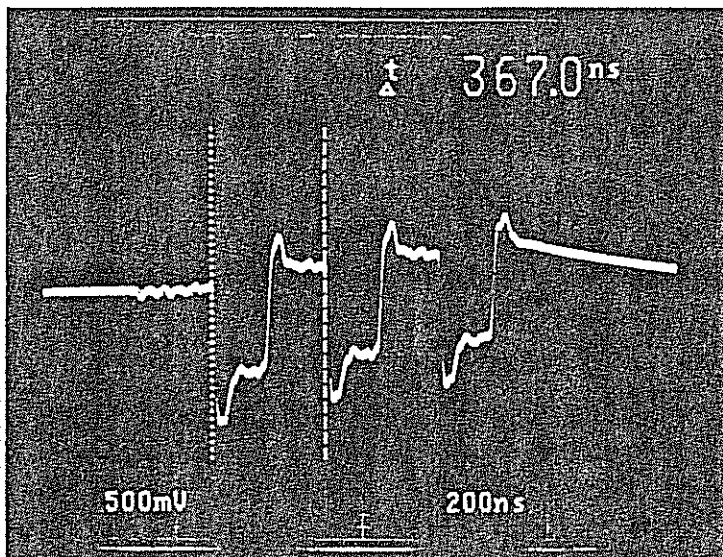
4.2.3. TEST OF LINEAR TRANSMIT AND FOCUSING ELECTRONIC

*You need : Open or closed machine
Sigma 1 linear checkbox
Oscilloscope*

- Connect the transducer cable as well as the TM/Doppler connector of the checkbox to the Sigma 1.
- Select the following settings on the checkbox :
XMIT ON
MODE 9
TRANSDUCER CODE 7A (= ULAP lin 3.5MHz)
FREQUENCY 3.5MHz
PULSE LENGTH F
SEGM 6

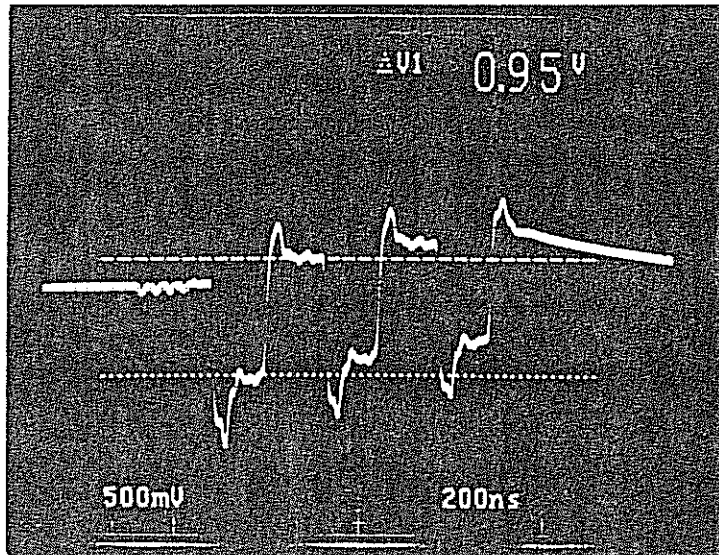
a) Control of the frequency tuning

- Connect the transmission output of the check box to an oscilloscope with a coax cable and 50 Ohm termination. Observe the pulse on the scope (500mV/div, 200 ns/div, synchronized on SRV \rightarrow). Within the measurement accuracy you should find the indicated time interval between the two markers.
- Press TM
DEPTH 5
FAR



b) Control of the transmit focussing

All settings being maintained, measure on the scope the pulse amplitude. You should find $0.95V \pm 0.1V$. By selecting the different segments on the checkbox, make sure that all 16 phases are equal (= within the tolerance above specified) and with the same polarity. If you find an idle phase, you have got an interlace beam. In this case, move the TM marker 1 step with the trackball and make sue that all 16 phases are working.



- Press NEAR

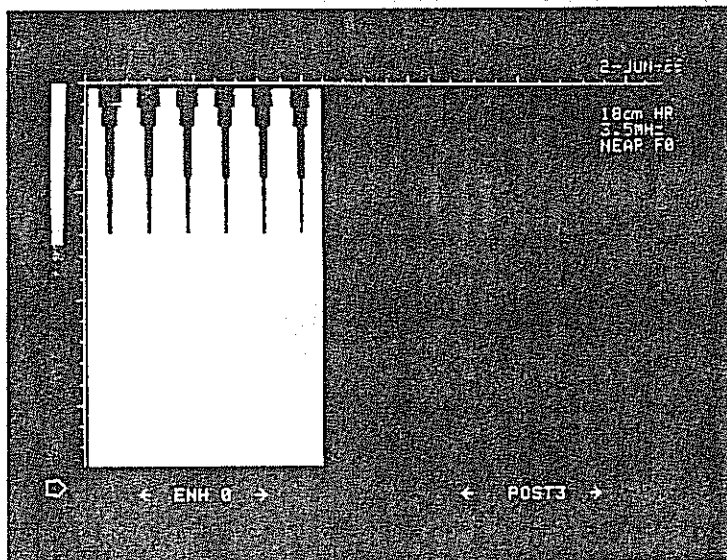
By selecting the different segments, control the transmission apolization.

c) Control of the receive-focussing

All settings being maintained,

- press 2D
DEPTH 4
NEAR

Observe the TV monitor. The picture must look like the photo below. By selecting the different segments on the checkbox, make sure that all the 16 receive channels are OK.



d) Control of the linear Gain Calibration

- Select the mode 0 of the checkbox
- Press 2D
DEPTH 4
NEAR
- Place the TM marker on the brightest bar
- Press TM
- Set TGC2, TGC3, ... TGC9 min
Repeat min
ENHANCE 0
- Observe the GCV voltage (available on the checkbox) on the scope (500mV/div, 50 micro sec/div, synchronized on SRV \rightarrow).
- Adjust TGC1 to suppress the break of the first zone.
- Observe the TMZ output (available on the checkbox) on the scope (500mV/div, 50 micro sec/div, synchronized on SRV \rightarrow).
- Adjust the TM gain to have the max of TMZ at 2.00V (1.90V with jumper in position A).
- Observe again the GCV voltage on the scope. It should lie at 1.80V ± 200 mV).

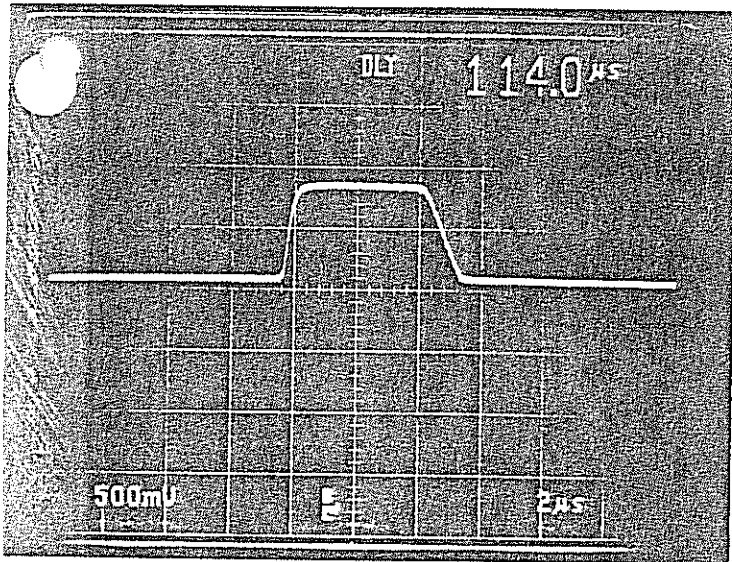
e) Control of the pulse slope

All other settings beeing maintained,

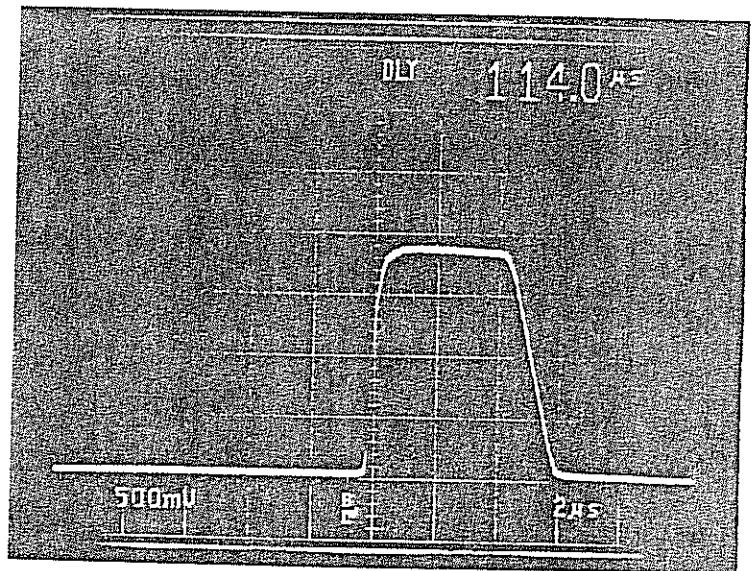
- Select the mode 6 of the checkbox
- Press 2D
- Place the TM marker on the brightest bar
- Press TM

SET T DIRECT-TMZ

- Observe the TV monitor and place the pulse at a depth of 9.5cm with the depth potentiometer of the checkbox.
- Observe the TMZ voltage on the scope (500mV/div, 50 micro sec/div, synchronized on SRV $\overline{\text{f}}$, delayed trigger 114 micro sec and 2 micro sec/div). The curve should look like the one on the photo below, without over or undershoot and with fast rise and fall time.



Jumper in position B



Jumper in position A

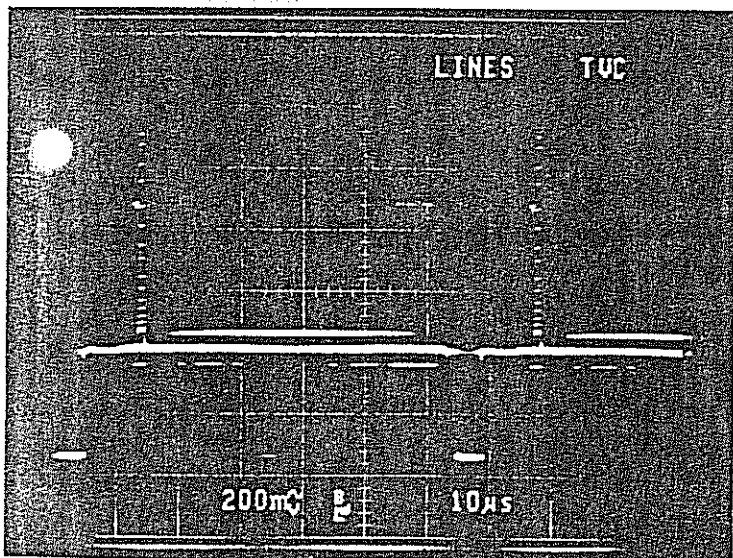
4.2.4. TEST OF THE VIDEO OUTPUT

*You need : Open machine
3.5MHz cardio probe
75 Ohm termination
Oscilloscope*

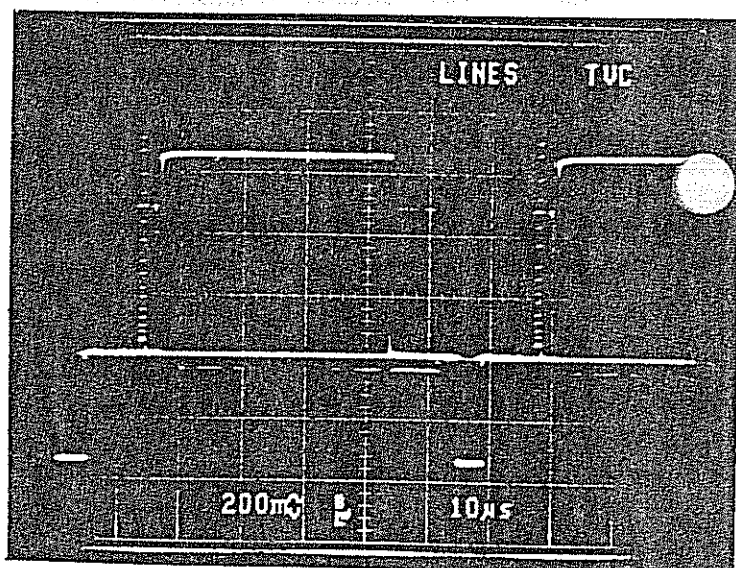
- Connect a 3.5MHz cardio transducer
- Set normal image
 - Post 2
 - TGC 1, TGC 2 ... TGC 9 min
 - 2D Gain min
 - TM Gain min
 - Reject min
- Observe the video signal of the Rec Out output terminated with a 75 Ohm resistor on the scope (200mV/div, 10 micro sec/div).
- With the black porch as reference level, you should find the following voltage measurements within $\pm 50\text{mV}$:

Overlay extra-white	710mV
Image white for normal image	700mV
Image white for inverse image	480mV
Overlay white	480mV
Image black	40mV
Black porch	0mV
Sync pulse	-300mV

If there is an oscillation, the 16 shades of the greyscale are not clearly visible and the image black is thick. This can better be seen in inverse TM (black on white). The two photos show a normal Rec Out output.



2D



TM

- Control of the NSTC Standard :
Switch power off. Set the jumper ST2 of the PERIP Board on NTSC and the TV monitor switched on 60Hz. The geometry must still be OK. Return to the PAL standard (PERIP ST2 on PAL and TVM switch on 50Hz).

4.2.5. TEST OF THE LSR OUTPUT

*You need : Open machine
3.5 cardio probe
Line scan recorder*

- Connect a 3.5MHz cardio probe and make an image of the RMI phantom.
- Connect the ECG simulator.
- Press ECG
TM
SET TM 50mm/s
SET T 16 GREYSCALE
DEPTH 1
- Record on paper about 5 seconds for each depth.
After each DEPTH-change you must press again on the sofkey 16 GREYSCALE.
The time-depth markers must look like black dots surrounded with a white rectangle. Verify that the depth indicated by these markers correspond to the nominal one within 4%.
Check the quality of the ECG trace.
- Press 2D
- Place th TM beam on a small detail of the RMI phantom.
- Press TM
SET TM 25 mm/s
- Record on paper about 5 seconds for each depth and check the quality of the record.
- Control of the PRINT key :
Connect the REC OUT output of Sigma 1 to the video input of the line scan recorder and make a copy using the PRINT key of Sigma 1.

4.2.6. TEST OF DOPPLER HF INPUT/OUTPUT SOCKET

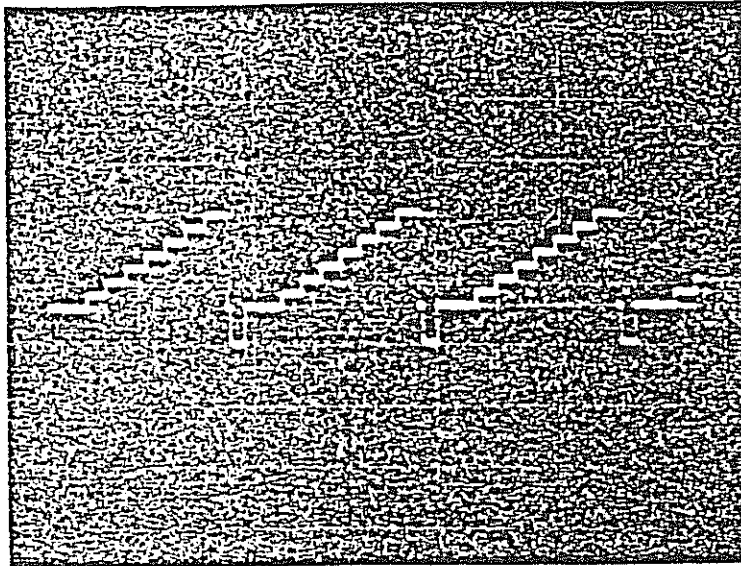
The connection between the Doppler HF socket on the rear panel and the connectral have to be ckecked with a special test adapter (to be designed) to make sure that the switching on the INSEC board works properly and that there is no crossing between the signals (the crossing of Tx+ and Tx- for instance has very undesirable effect).

4.2.7. CONTROL OF THE INTERFERENCE LEVEL

*You need : Closed machine
3.5MHz cardio probe
5MHz ULAP linear transducer*

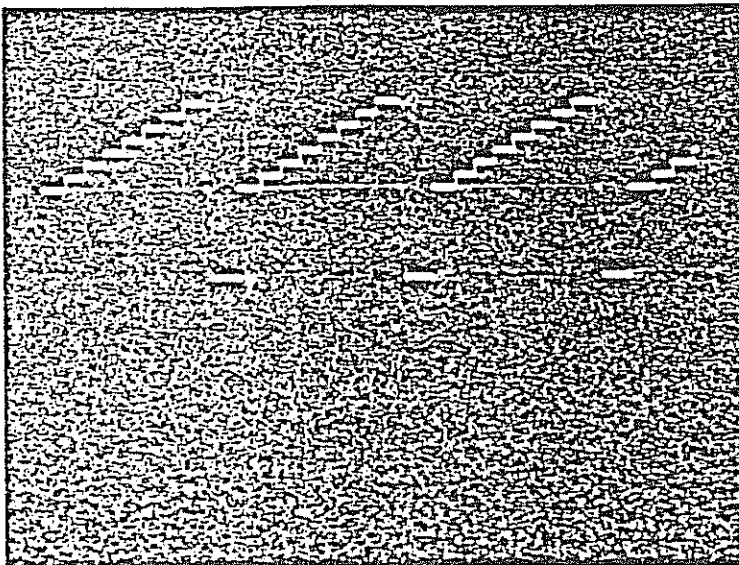
- Connect a 3.5MHz cardio probe and a 5MHz ULAP linear transducer to the Sigma 1 closed.
- Set TGC 1, TGC 2, ... TGC 9 max
2D Gain max
TM Gain max
Reject min
- Pres TM Normal (white on black)
- Set Trad = 0 (with the switch on the Doppler/TM connector)
- Observe the Sigma 1 TV monitor. The noise appearance must be steady and smooth, without any distinguishable dot, line, curve or pattern. Try it with the 5 depths.
- Press 2D Normal (white on black)
Idem
- Press LIN
Idem

4.3. TV monitor p.c.b.



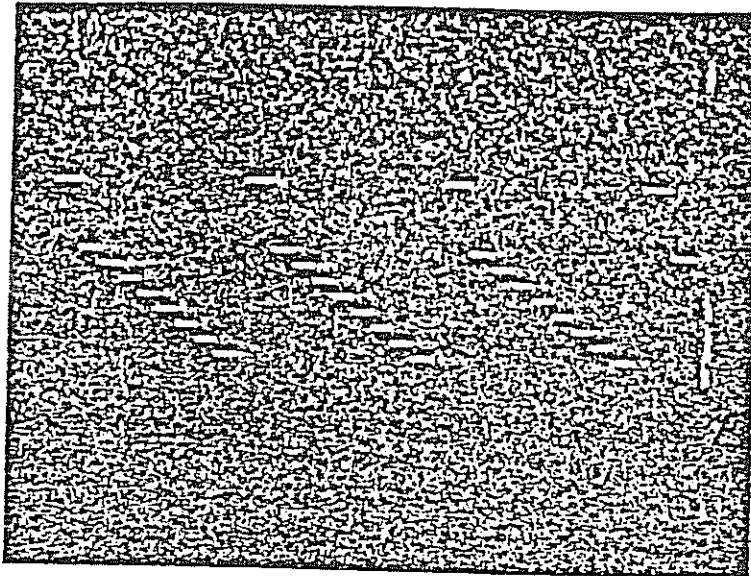
TP 21

0V
H
0,5V/DIV



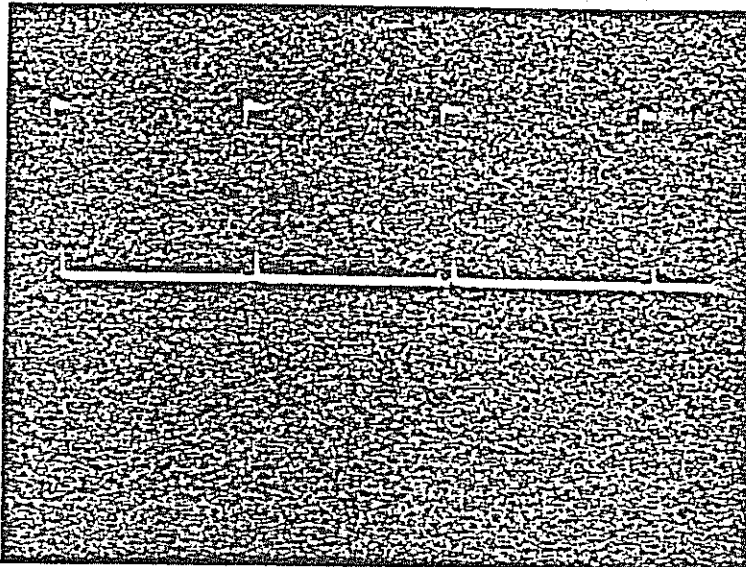
TP 5

0V
H
1V/DIV



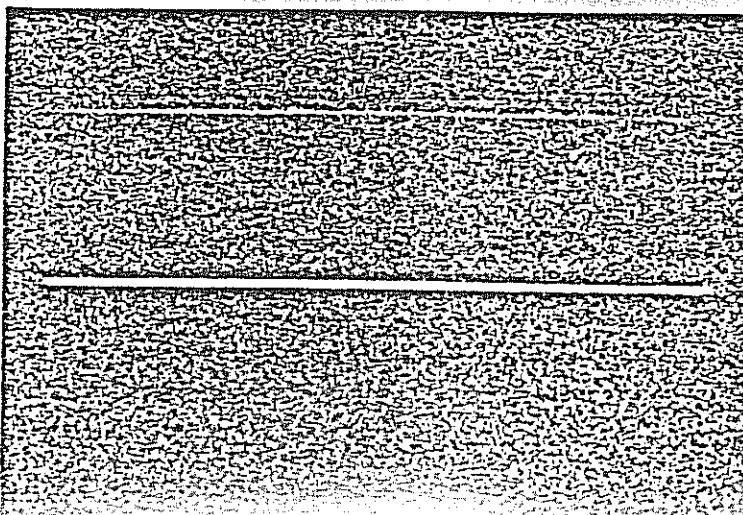
TP7

H
10V/DIV
0V



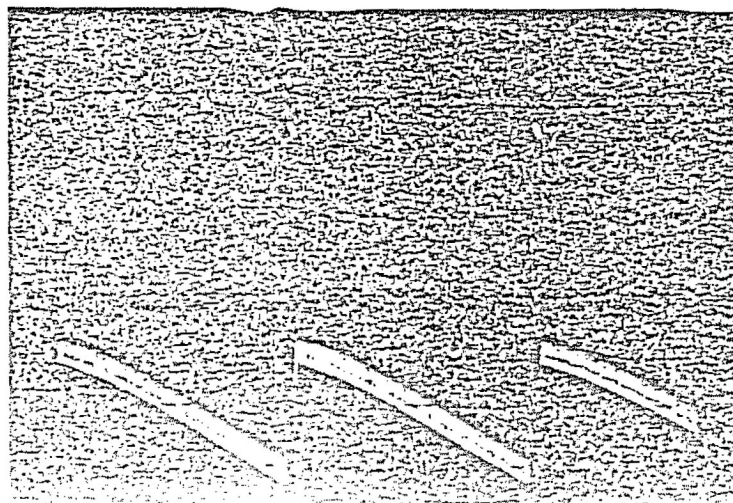
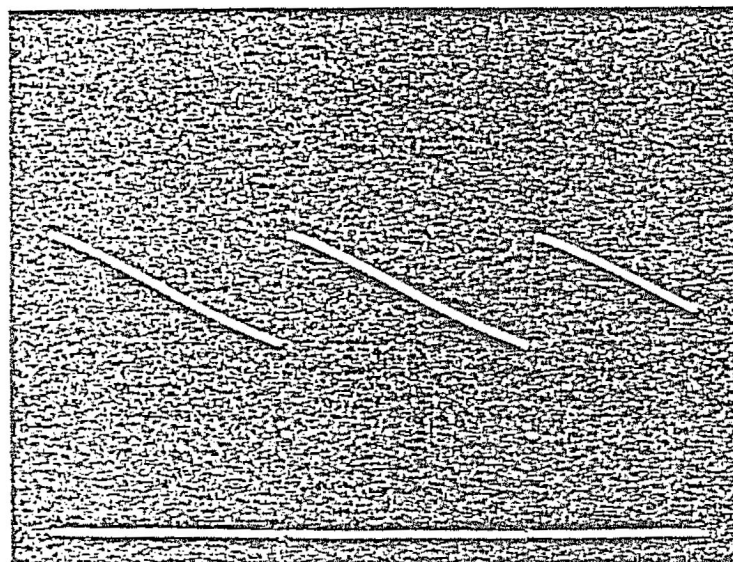
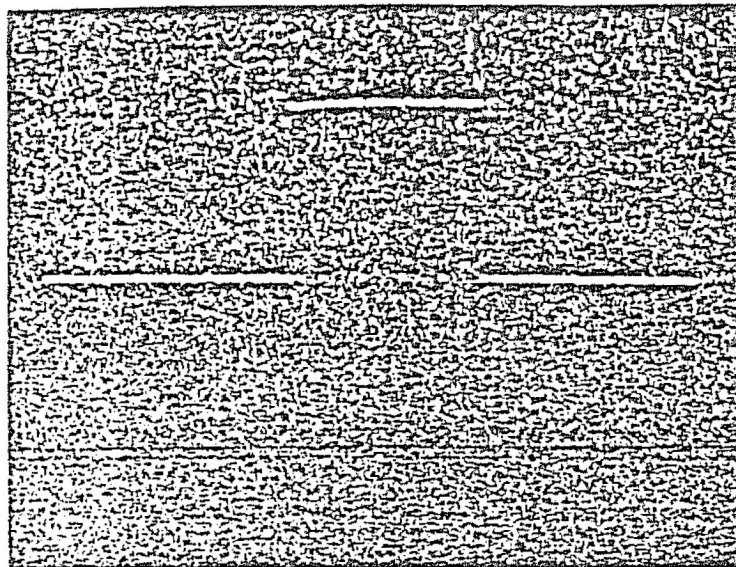
TP4 (1)

H
0,5V/DIV
0V



TP4(2)

V
0,5V/DIV
0V





Maintenance and Safety Checks

5

5. SAFETY AND PERFORMANCE CHECKS (UNIT CLOSED)

5.1. Test of closed machine

KEY	ACTION
SET TECH DATA	Softkey-line changes
SOUND VEL	Sound velocity 1540 appears. Program 1401
SET CLOCK	Program permanent clock
ENHANCE	Return to standard softkey-line
FREEZE	Defreeze
DEPTH 1	Image goes to 8 cm depth
ANGLE 60°	Angle changes to 60°
SET TECH DATA	Softkey-line changes
INIT	Stores init-format into permanent RAM
	Switch power off and wait 10 seconds. Switch power on Check if depth is 7.5 cm, angle 60°, date as programmed above.
SET TECH DATA SOUND VEL	Check if sound vel. is 1401. Program 1540
	Note : Loss of angle, depth, date or sound velocity indicates a problem with the permanent RAM. Check battery.

KEY	ACTION
FREEZE	Defreeze
ENHANCE	Return to standard softkey-line

Now different image formats should be tested. There are 48 different formats. We do not test all of them but just the extreme ones.

Check if machine is in 60°, 8cm, high resolution. For the format above, look if the image is stable, without white or black lines. Step through the following states:

```

:-----:
: DEPTH : SURVEY/HR : ANGLE : HEAD :
:KEY CM : : :
:-----:
: 1 8 : HR : 60° : ABDO :
: 1 8 : S : 60° : ABDO :
: 1 8 : S : 80° : ABDO :
: 1 8 : S : MAX (105°) : ABDO :
: 1 10 : HR : MAX : ABDO :
: 2 13 : HR : MAX : ABDO :
: 3 18 : HR : MAX : ABDO :
: 4 23 : HR : MAX : ABDO :
: 5 23 : S : MAX : ABDO :
:
: Change head. Attach CARDIO 3.5 MHz :
: transducer :
:
: 1 8 : HR : 60° : CARDIO :
: 1 8 : S : 60° : CARDIO :
: 1 8 : S : 80° : CARDIO :
: 1 8 : S : MAX (90°) : CARDIO :
: 1 8 : HR : MAX : CARDIO :
: 1 10 : S : MAX : CARDIO :
: 2 13 : S : MAX : CARDIO :
: 3 18 : S : MAX : CARDIO :
: 4 23 : S : MAX : CARDIO :
: 5 23 : HR : MAX : CARDIO :
:-----:

```


KEY	ACTION
SET I	Brings you back to 60°, 8cm
NEAR/FAR	Switch back and forth from near to far. Near mode should give a low gain image with very fine granularity. Far mode should give a bright image.
FREEZE	freeze image
FREEZE	image goes back to live
Footwitch FREEZE	live image
→ ←	inverts image orientation
TM	format changes to TM
SET TM	softkey-line changes
10 50 20	check different TM speeds
MONO	Blank TM trace if no MONO Transducer connected. Connect one and press it on the phantom. Check result.
TM	return to wobbler
SET	fetch test menu
T	
GREYSCALE ALL	generates all 60 greylevels. Checks homogeneity. No steps may be visible.

KEY	ACTION
Footswitch 2D/TM	TM-image
Footswitch 2D/TM	2D-image
ENH	try enhance -1, -2, -3 characteristic changes are visible
ENH	step through -2, -3, 0, 1, 2, 3 characteristic changes are visible. Go back to ENH 0.
PROC	step through PROC 2, 3, 4 characteristic changes are visible
FILTER	step through FILTER 1, 2, 3 small changes in signal to noise are visible. Compare with reference machine.
SET I	go back to init states connect ECG-simulator to ECG input. Switch on standard ECG.
ECG YES/NO	ECG appears on screen, must be clean switch all interference sources of ECG- simulator on (50 Hz, base line shift) ECG on screen will be less clean but still well visible
GAIN+	Check ECG gain control.
GAIN-	Adjust to full scale signal
SYNC I	check sync mode use soft keys for adjusting sync positions
TM	TM-image
ECG YES/NO	switch ECG off
2D	2D-image use trackball for adjusting TM-marker

KEY	ACTION
TEXT	use trackball for adjusting cursor
A-Z	set cursor up - left. Try all letters Q...M and 1-9
1-9	numbers 1...9 and SPACE - / . LINE FEED
	check rub-out
CLEAR	clear screen (takes several seconds)
SET	cursor jumps to PAT ID-field
PAT ID	write QUERTY
PAT ID	clears PAT ID
PAT ID	recalls "QUERTY"
SET	
TECH DATA	SIGMA 1 write permanent TEXT : KONTRON into the upper left corner exit with "LINE FEED" "LINE FEED"
TECH DATA	recall, clear, recall again the permanent text
TECH DATA	clear and recall technical data
MAG	magnifies the image; use trackball for positioning the window
MAG	return to normal mode
DIST	check distance measurement on graticule
\pm	
AREA	check area measurement
\pm	
PRINT	makes a hard copy on the line scan recorder (if there is any, else measure output on rear panel connector) Now you have controlled all keys and all operating modes of the machine. Now the correct time and date and the init mode should be programmed.

KEY	ACTION
SET I	recalls actual init mode
80° DEPTH 3	corrects for wanted mode
SET TECH DATA MORE INIT	stores init mode

END OF TEST

Test of external TV connections

Conect TV monitor with 75 Ohm impedance to "Monitor out".
The image should appear as on the monitor.

Switch live-replay to REPLAY. Both images should disappear.

Connect TV-monitor with 1k impedance to "REC out" and to "REC in".
Now the image appears again on both monitors.

Switch to LIVE.

Now the intensity of the external monitor must **not** change. If it changes, there is something wrong with the dummy 75 Ohm termination on the live-replay switch.

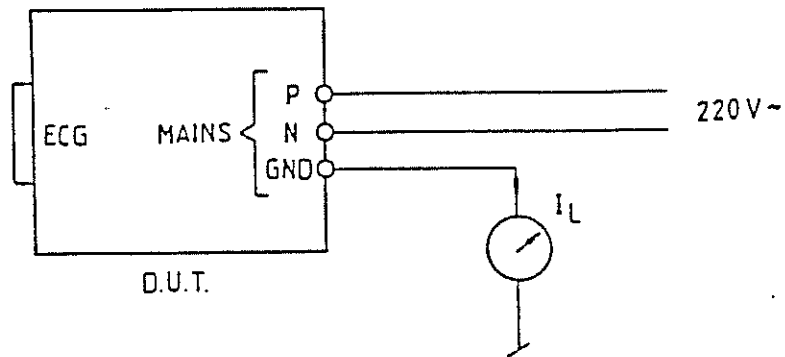
PS : Make sure that every machine leaving the factory has the following
init-mode setting :

- Depth 4
- HR (high resolution)
- NEAR (near mode)
- Angle 80°
- Enhance off
- Filter off
- Image polarity : normal (black background)
- TM polarity : inverse (white backgroud)
- Sound velocity : 1540 m/s
- Correct date
- Processing 3
- Permanent Memory enmpty

5.2. Safety tests

Note : the measuring frequency of the ampere meter may be reduced to 50kHz with a low pass filter.

TEST I



D.U.T. : device under test

ECG : ECG input

P : phase

N : neutral

GND : protection ground

I_L : leakage current

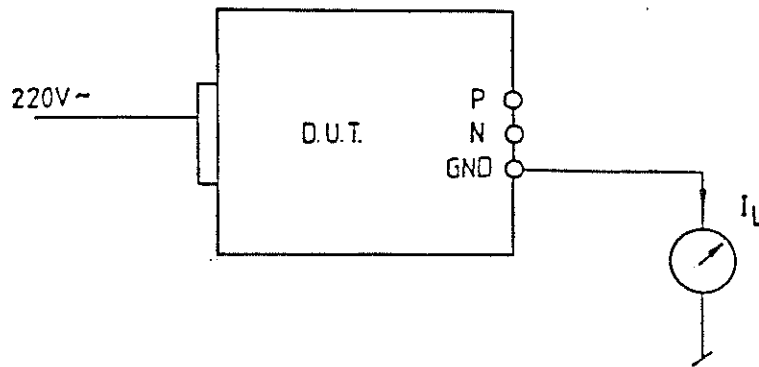
Condition : $I_L < 100 \text{ micro-A}$

TEST II

Same as I but neutral disconnected

Condition : $I_L < 100 \text{ micro-A}$

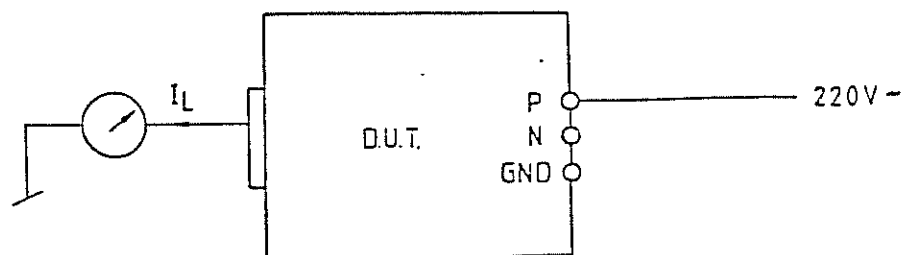
TEST III



220V AC applied to any patient ECG lead

Condition $I_L < 50$ micro-A

TEST IV

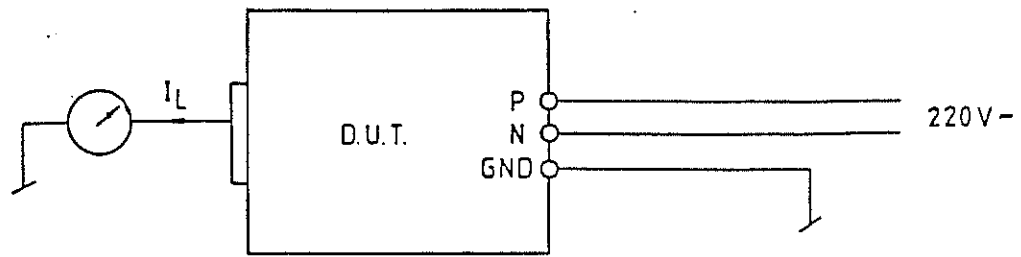


GND disconnected

Neutral connected or hot (whichever is worse)

Condition : $I_L < 50$ micro-A

TEST V



Normal operation

Condition : $I_L < 10 \text{ micro-A}$



Assembly and Disassembly

6

6. ASSEMBLY AND DISASSEMBLY

6.1. CMOS components

The SIGMA 1 has CMOS parts. During maintenance it is essential to prevent transfer from static electrical charges to circuit board and components by :

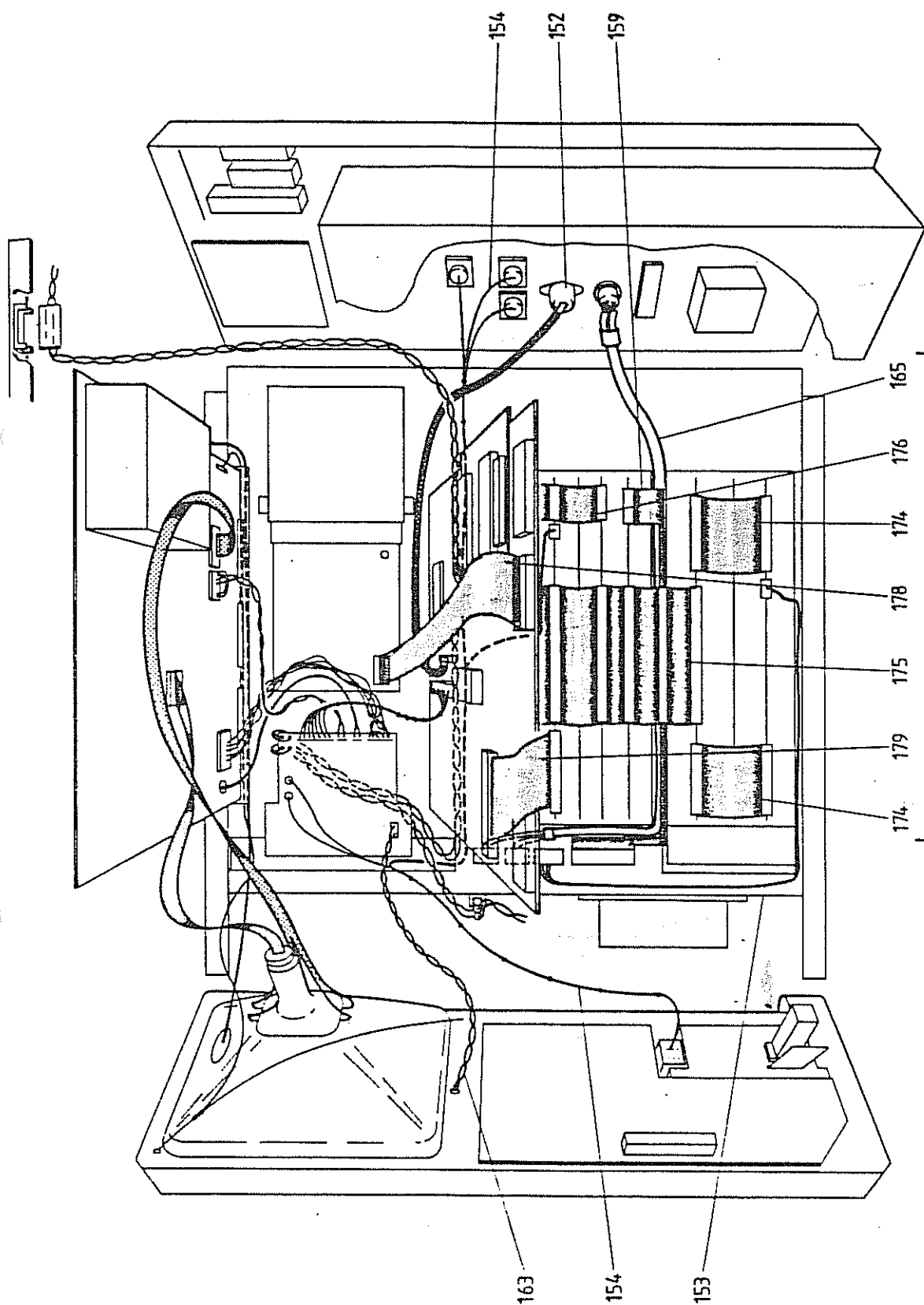
- grounding instrument
- grounding soldering iron
- wearing a grounded wrist strap (via 1 Mohm to ground)

It is imperative to keep the surface of the boards absolutely clean and insulated.

6.2. Exploded views

(See following pages)

[illegible]



03 100 N500
SIGMA 1SC MAP

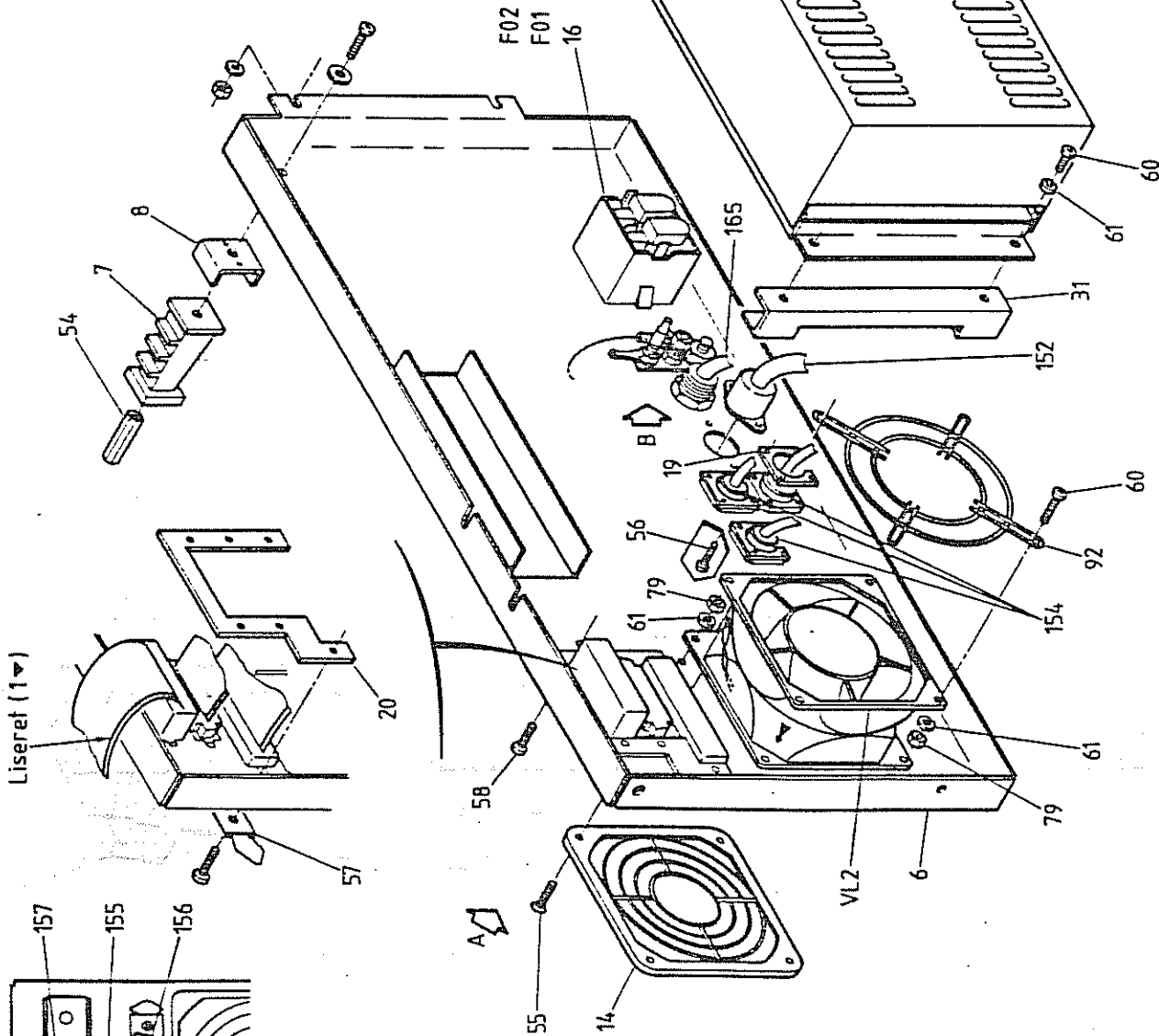
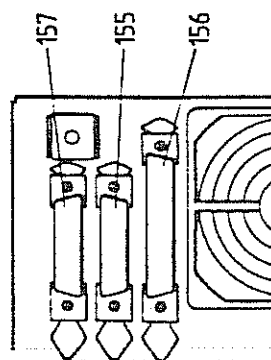
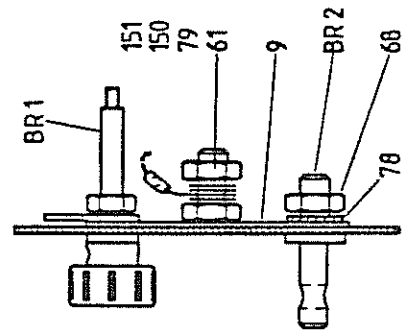
Marque	Précision
Barometre	Poids
Indicateur	Indicateur
N° d'ensemble	102 par l'ensemble
SIGMA 1SC	9/10
CABLAGE GENERAL	
Date :	Verifié :

ROCHE
Bioclectronique
KONTRON

03.110 c.500

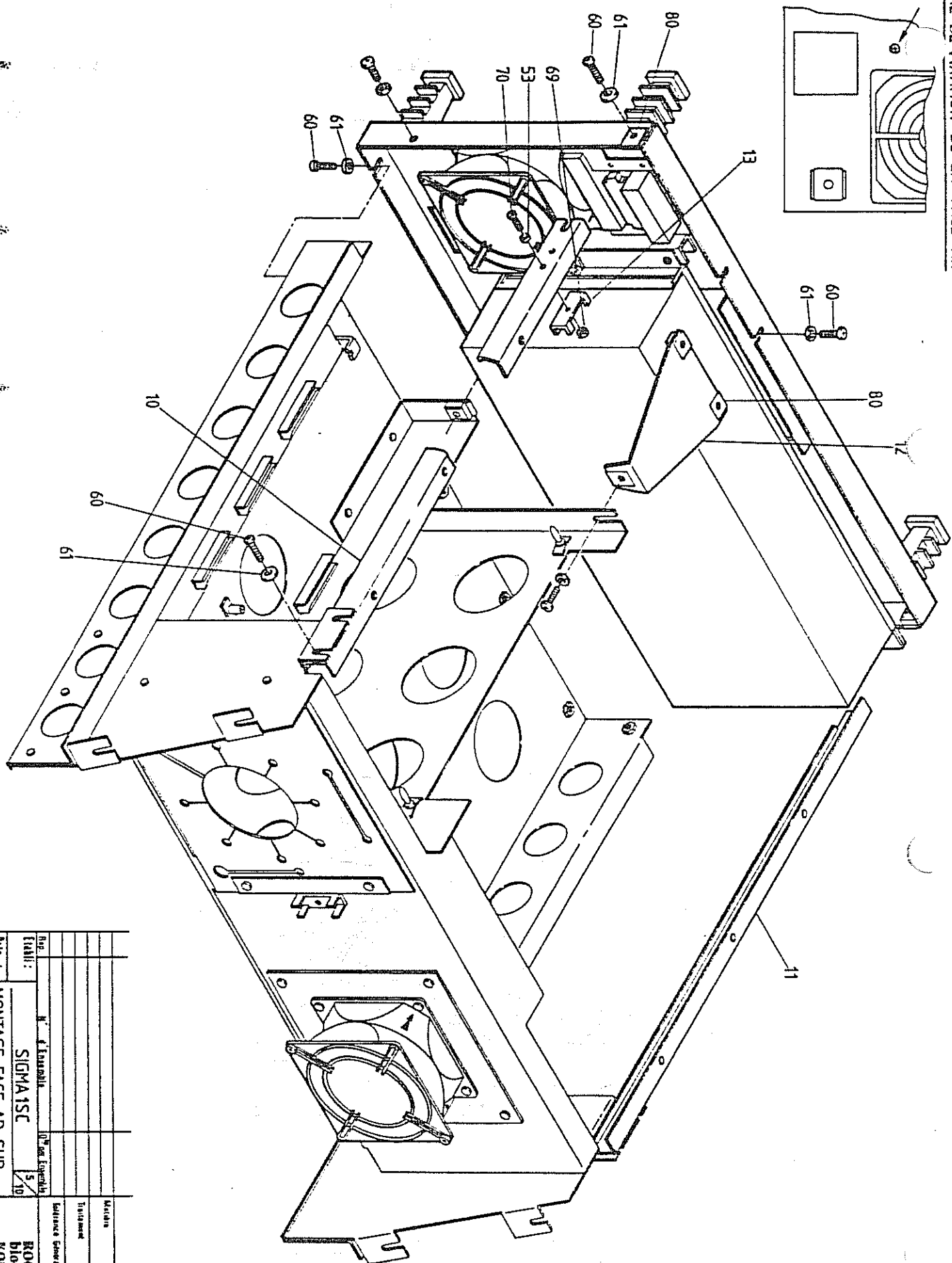
VUE SUIVANT B

Liseret (1♥)



Marque :	N° d'ensemble :		10 th sur l'ensemble :	1	10
Modèle :	N° de montage :		SIGMA 1SC		
Poids :	Régulateur de vitesse :		EQUIPEMENT FACE AR		
Échelle :	Régulateur de vitesse :				
ROCHE					
bioelectronique					
KONTRON					
03.110.0500					

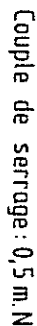
03	110	500
----	-----	-----



N° d'ensemble		N° de pièce		Matière		Finition		Finition	
SIGMA 1SC		5/10							
MONTAGE FACE AR SUR									
CHASSIS									
Date :		03 110 c 500							
Vérifié :									
N° d'ensemble		N° de pièce		Matière		Finition		Finition	
SIGMA 1SC		5/10							
MONTAGE FACE AR SUR									
CHASSIS									
Date :		03 110 c 500							
Vérifié :									
N° d'ensemble		N° de pièce		Matière		Finition		Finition	
SIGMA 1SC		5/10							
MONTAGE FACE AR SUR									
CHASSIS									
Date :		03 110 c 500							
Vérifié :									

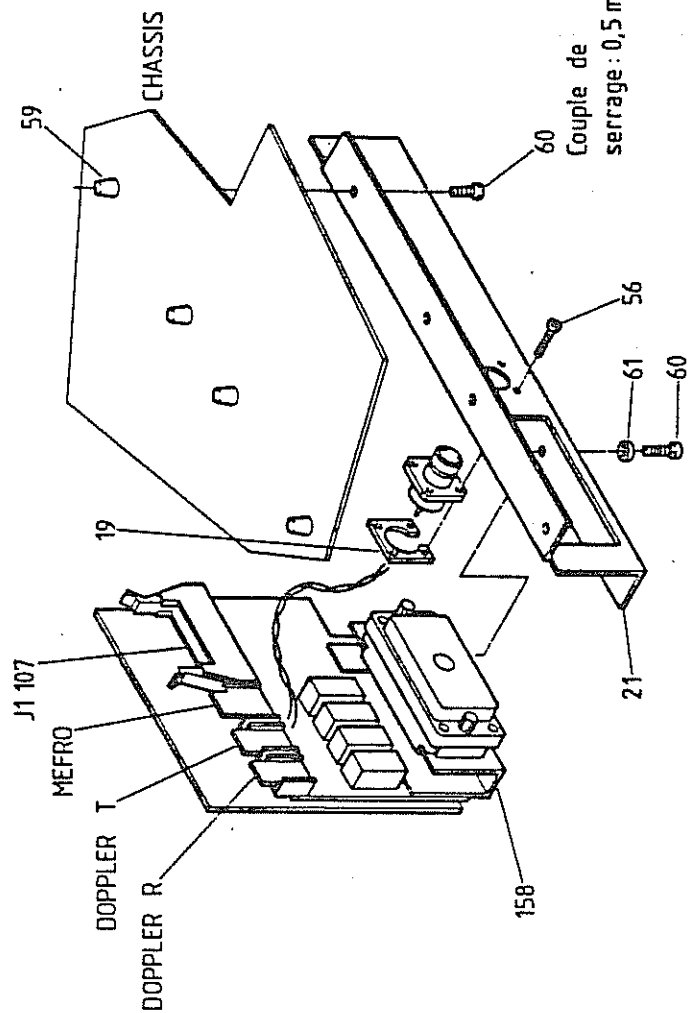
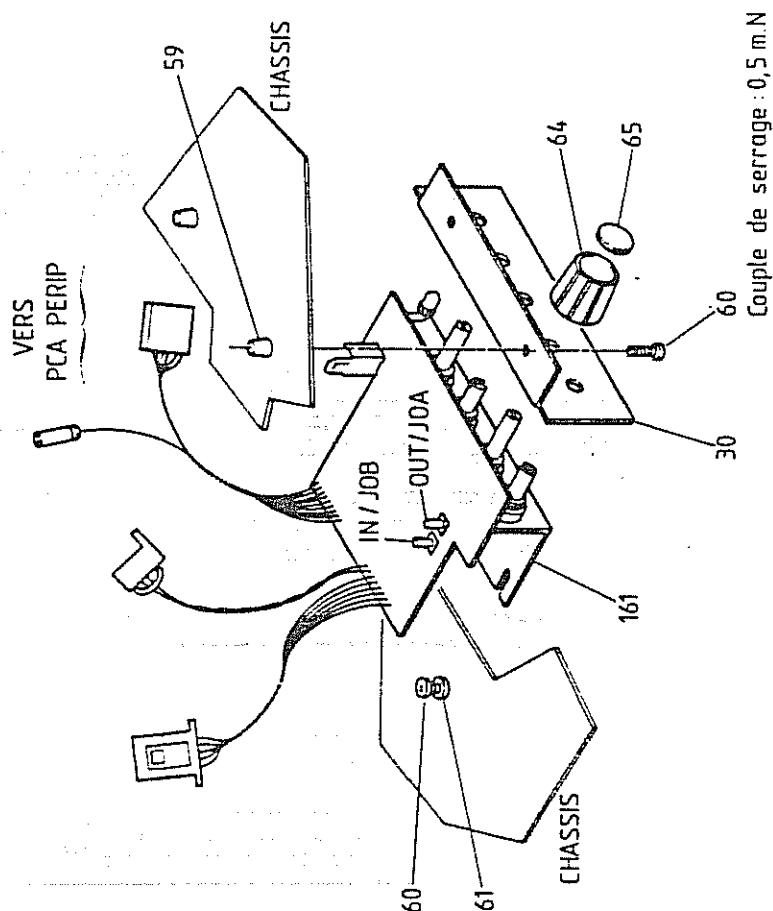
Ce document est la propriété de Roctec et ne peut être reproduit ou communiqué sans autorisation écrite.


VUE SUIVANT D

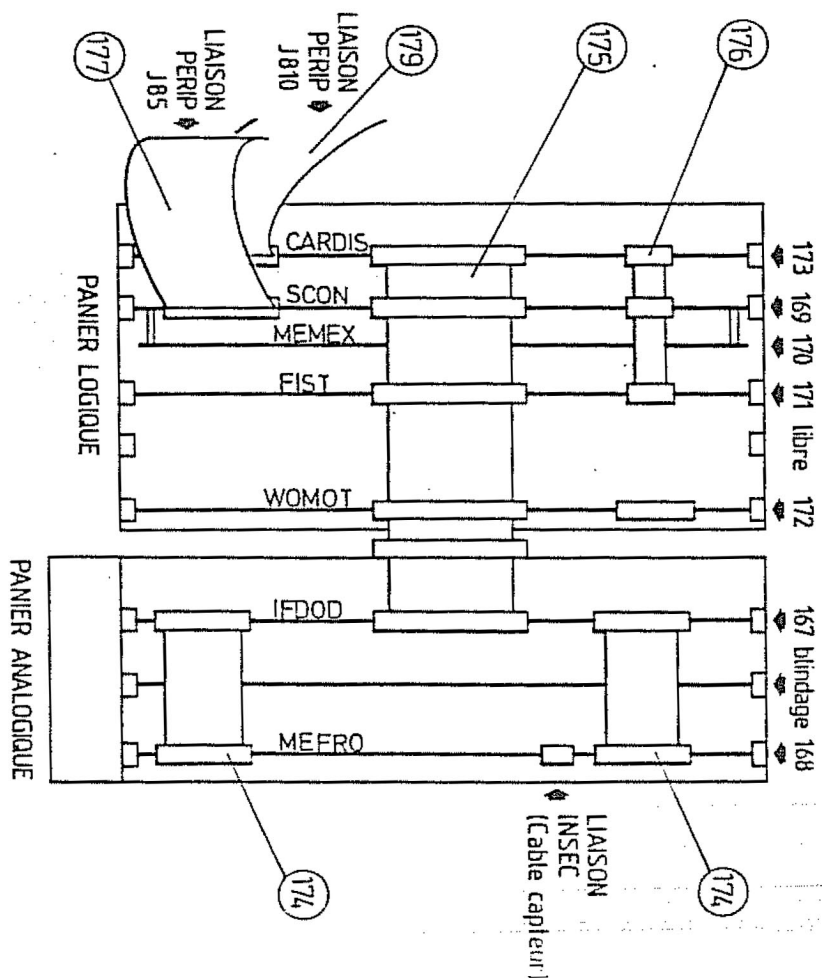
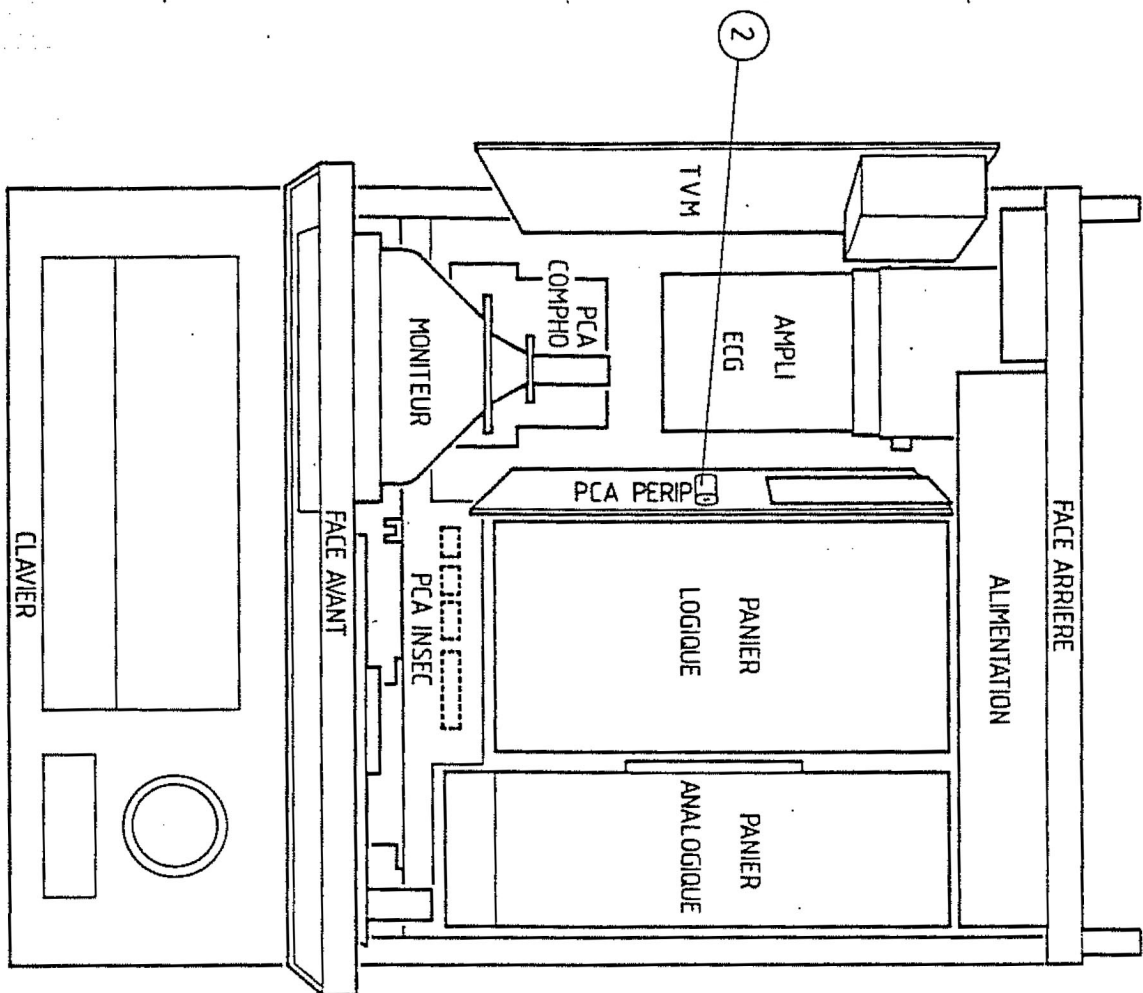
MODIFICATION

РСА "СОРНО"

VERS
A PERIP



N°	N° d'ensemble	10 ⁴ mg / sachet		ROCHE Bioelectronique KONTROL	0.3. 1.1.0. c.500 10
Préparation	SIGMA 1SC PREPARATION				
Validité	COMPO / INSEC				
Matériau	Protection				
Prétraitement	Fusils				
Indications	Echelle				



INTERCONNEXION DES PANIERS

Model	Protection
Reinforcement	Ponds
Balance Control	Electric
N° of Assembly U ^m of Assembly	
Full Serial Date : 26/10/85	SIGMA 1SC IMPLANTATION
860.565 03 100 - 5000	



Trouble Shooting

7

7. FAULT FINDING AND STANDARD EXCHANGE

* in preparation *



Parts List

8. PARTS LIST

8.1. Recommended spare parts list

PART NUMBER	DESCRIPTION	A	M.B	B	C
	BOARDS (incl. components)				
	=====				
852724	IFD00	*	1	2	0
852775	MEFRO + SGM2	*	1	2	0
854956	PERIP + PARSIO + FLAT CABLE	*	0	1	0
861286	SCON 2	*	1	2	0
852848	MEMEX	*	1	2	0
852864	FIST	*	1	2	0
852899	WOMOT	*	1	2	0
852929	CARDIS	*	1	1	0
854786	COMPHO	*	0	1	0
863491	INSEC B	*	0	1	0
854751	POLIN	*	0	1	0
861308	SISEND	*	1	2	0
845604	T-FOC	*	1	1	0
852791	LIFRO	*	1	3	0
	SUBASSEMBLIES				
	=====				
861561	TV MONITOR (PCB & CRT)	*	0	1	0
854638	POWER SUPPLY	*	1	1	0
855529	TRACKBALL	*	1	1	0
855413	ECG AMPLIFIER	*	0	1	0
862827	KEYBOARD SIGMA 1	*	0	1	0
860859	CLAVIER FRANCAIS	*	0	1	0
	CABLES				
	=====				
858781	FLAT CABLE N 4	*	0	1	0
858803	FLAT CABLE N 6	*	0	1	0
858811	FLAT CABLE N 10	*	0	1	0
858838	FLAT CABLE N 11	*	0	1	0
858862	FLAT CABLE N 18A	*	0	1	0
858897	CABLE FOR TRACKBALL N18D	*	0	1	0
856894	ECG CABLE	*	0	1	0
855049	WOBBLER TRANSDUCER CABLE	*	0	1	0
	DIVERS				
	=====				
	BOTTOM COVER	*	0	1	0
857998	FRONT COVER (KEYBOARD HOUSING)	*	0	1	0
860131	KONTRON INSTRUMENTS LABEL FOR FRONT COVER	*	1	3	0
856339	FRONT PANNEL	*	0	1	0
860832	FACE DECOR	*	0	1	0
857106	COVER	*	0	1	0
860611	SECTORIAL TRANSDUCER HOLDER	*	0	1	0
847275	LINEAR TRANSDUCER HOLDER	*	0	1	0
850608	ROLL FOR CAMERA	*	2	3	1
	TEST TOOLS				
	=====				
861448	TEST CABLE	*	1	1	0
587370	SECTORIAL CHECK BOX	*	1	1	0
586730	LINEAR CHECK BOX	*	1	1	0
	DOCUMENTATION				
	=====				
867381	SIGMA 1 SERVICE MANUAL	*	1	2	1
864056	OPERATING MANUAL	*	1	1	1
864064	MANUEL D'UTILISATION	*	1	1	1

[illegible]

RECOMMENDED SPARE PARTS LIST FOR SIGMA 1 AC

PAGE 1 OF 2

PART NUMBER	DESCRIPTION	A	M.B	B	C
	BOARDS (incl. components)				
	=====				
868116	AAFO	*	1	2	0
854956	PERIP + PARSIO	*	0	1	0
861286	SCON 2	*	1	2	0
852848	MEMEX	*	1	2	0
852864	FIST	*	1	2	0
852899	WOMOT	*	1	2	0
852929	CARDIS	*	1	1	0
854786	COMPHO	*	0	1	0
868167	MASIC	*	0	1	0
854751	POLIN	*	0	1	0
861308	SISEND	*	1	2	0
868132	AT-FOC	*	1	1	0
852791	LIFRO	*	1	3	0
	SUBASSEMBLIES				
	=====				
861561	TV MONITOR (PCB & CRT)	*	0	1	0
874914	POWER SUPPLY AC	*	1	1	0
855529	TRACKBALL	*	1	1	0
855413	ECG AMPLIFIER	*	0	1	0
874523	KEYBOARD SIGMA 1 AC	*	0	1	0
860859	CLAVIER FRANCAIS	*	0	1	0
	CABLES				
	=====				
858781	FLAT CABLE N 4	*	0	1	0
858803	FLAT CABLE N 6	*	0	1	0
858811	FLAT CABLE N 10	*	0	1	0
858838	FLAT CABLE N 11	*	0	1	0
858862	FLAT CABLE N 18A	*	0	1	0
858897	CABLE FOR TRACKBALL N°18D	*	0	1	0
856894	ECG CABLE	*	0	1	0
	MISCELLANEOUS				
	=====				
	BOTTOM COVER	*	0	1	0
857998	FRONT COVER (KEYBOARD HOUSING)	*	0	1	0
860131	KONTRON INSTRUMENTS LABEL FOR FRONT COVER	*	1	3	0
856339	FRONT PANNEL	*	0	1	0
860832	FACE DECOR	*	0	1	0
857106	COVER	*	0	1	0
860611	SECTORIAL TRANSDUCER HOLDER	*	0	1	0
847275	LINEAR TRANSDUCER HOLDER	*	0	1	0
850608	ROLL FOR CAMERA	*	2	3	1
	TEST TOOLS				
	=====				
861448	TEST CABLE	*	1	1	0
587370	AA CHECK BOX	*	1	1	0
586730	LINEAR CHECK BOX	*	1	1	0
	DOCUMENTATION				
	=====				
867381	SIGMA 1 SERVICE MANUAL	*	1	2	1
594310	OPERATING MANUAL	*	1	1	1

8.2. Complete spare parts list

Repères	Quantité	DESIGNATION	Référence	Article
1	1,000	PCA MODIF SCON 2 SIGMA 1	03 121 N011	872644 106
2	1,000	PCA RGA3-ADAPTER	03 121 N012	891495 107
99999	0,200	FIL FEP WRAP-VERT 0.05MM2	KW03-30A2	853739 98
99999	1,000	PCB SCON 2	36 120 B206-A	861294 103
C1	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 45
C2 à C6	5,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 26
C7	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2.5	517003 40
C8 à C9	2,000	COND.CERA.R 68 PF 2 % 100 V	680 10 689-P2.5	517062 41
C10	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 45
C11	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 27
C12	1,000	COND.FILM R 47 NF20% 250 VDC	BR7L P10	517259 44
C13 à C15	3,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 45
C16 à C17	2,000	COND.TANT.G 6.8UF P 5.08 50V	TAP	549797 64
C18	1,000	ASTOCK NUL UTILISER 411604	SEM1E470 D5H11	537489 61
C19	1,000	COND.CERA.R 680 PF 10 % 100 V	630 08 681-P2.5	517127 42
C20 à C21	2,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 45
C22	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2.5	510955 25
C23	1,000	COND.CERA.R 1 NF 10 % 100 V	630 08 102-P2.5	517135 43
C24	1,000	COND.CERA.R 270 PF 2 % 100 V	680 58 271-P2.5	575569 65
C25	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 45
C26 à C27	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 26
C28 à C57	30,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 89
CR1	1,000	DIODE ZEN. 3.9V 5% 0.5W DO35	BZX55 C3V9	527491 57
CR2 à CR6	5,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 30
CR7 à CR8	2,000	DIODE VAR. 12V 22A620PF TO92	BB212	842478 94
CR9	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 30
J40	1,000	EMBASE P2.5 VER F 1X04PTS CI C	MKS2854-1-0-404	842583 95
J44	1,000	EMBASE HE10 VER M 2X25PTS CI C	65B EV 50M6 YCM	850659 97
J45	1,000	EMBASE HE10 VER M 2X20PTS CI C	65B EV 40M6 YCM	504238 3
J46	1,000	EMBASE HE10 VER M 2X08PTS CI C	3408-1203	598496 81
J48	1,000	EMBASE 41612 F 2/3X32PTS CI D	09 03 164 7825	838888 92
J49	1,000	EMBASE 41612 F 2/3X32PTS CI D	09 03 164 7825	838888 92
L1 à L6	6,000	SELF N.B 10UH 1 A	VK 200 2.5 38	702285 83
L7	1,000	SELF N.B 4.7UH10% 1R2 239MA	53838 L7D2.5	598003 79
Q1	1,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366 28
Q1	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413 84
Q2	1,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366 28
Q2	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413 84
Q3	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 73
Q4	1,000	TRAN.PNP 30V 0.2A 0.3W CB 76	BC212-B	593273 77
Q5 à Q6	2,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 73
Q7	1,000	TRAN.PNP 15V 50MA 0.6W TO 92	2N5771	735639 86
Q8	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 73
Q9	1,000	TRAN.NPN 15V 0.2A 0.4W TO 18	2N2369A	511374 29
Q9	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413 84
R1	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319 14
R2	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 17
R3	1,000	RES.COUC 205 OHMS 1% 1/2W	MRS 25	518069 46
R4	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491 21
R5	1,000	RES.COUC 10 OHMS 5% 1/4W	CR 25	515973 31
R6 à R9	4,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015 32
R10	1,000	RES.COUC 3.3 KOHMS 5% 1/4W	CR 25	510475 20
R11	1,000	RES.COUC 1.2 KOHMS 5% 1/4W	CR 25	516147 37
R12	1,000	RES.COUC 68 OHMS 5% 1/4W	CR 25	516074 34
R13	1,000	RES.COUC 1.2 KOHMS 5% 1/4W	CR 25	516147 37

Etabli:
Biemmi

Date:
06/06/90

Vérifié:

SIGMA 1

PCA SCON 2 SIGMA 1

861286

Repères topologiques

KONTRON
INSTRUMENTS

03 121 N009

004

FEUILLE 1 sur 4FEUILLES

Edi.

Date

Repères	Quantité	DESIGNATION	Référence	Article
R14	1,000	RES.COUC 68 OHMS 5% 1/4W	CR 25	516074 3
R15	1,000	RES.COUC 6.8 KOHMS 5% 1/4W	CR 25	516171 3
R16	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R17	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R18	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610 2
R19 à R20	2,000	RES.COUC 2.7 KOHMS 5% 1/4W	CR 25	510459 1
R21	1,000	RES.COUM 8.25KOHMS 1% 1/2W	MRS 25	518875 5
R22	1,000	RES.COUM 5.90KOHMS 1% 1/2W	MRS 25	518816 5
R23	1,000	RES.COUM 953 OHMS 1% 1/2W	MRS 25	518417 5
R24	1,000	RES.COUM 825 OHMS 1% 1/2W	MRS 25	518387 4
R25	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R26 à R27	2,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602 2
R28	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491 2
R29	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602 2
R30	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R31	1,000	RES.COUC 2.7 KOHMS 5% 1/4W	CR 25	510459 1
R32	1,000	RES.COUM 340 OHMS 1% 1/2W	MRS 25	869155 10
R33	1,000	RES.COUM 1.78KOHMS 1% 1/2W	MRS 25	518549 5
R34	1,000	RES.COUM 1.4 KOHMS 1% 1/2W	MRS 25	518492 5
R35	1,000	RES.COUM 237 OHMS 1% 1/2W	MRS 25	518093 4
R36	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R37	1,000	RES.COUM 3.32KOHMS 1% 1/2W	MRS 25	518689 5
R38	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319 1
R39	1,000	RESEAU SIL 5X 1 KOHMS 2% COM	4306R-101-102	812099 8
R40	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R41	1,000	RES.COUC 33 OHMS 5% 1/4W	CR 25	516031 3
R42	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R43	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015 3
R44	1,000	RES.COUC 330 OHMS 5% 1/4W	CR 25	510343 1
R45	1,000	RES.COUC 820 OHMS 5% 1/4W	CR 25	516139 3
R46	1,000	RES.COUC 330 OHMS 5% 1/4W	CR 25	510343 1
R47	1,000	RES.COUC 680 OHMS 5% 1/4W	CR 25	516120 3
R48	1,000	RES.COUC 820 OHMS 5% 1/4W	CR 25	516139 3
R49	1,000	RESEAU SIL 5X 1 KOHMS 2% COM	4306R-101-102	812099 8
R50	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378 1
R51	1,000	RES.COUM 301 OHMS 1% 1/2W	MRS 25	518158 4
R52	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378 1
R53 à R54	2,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R55	1,000	POT.CERMET 500 OHMS VERT.25 TR	64W-501	516899 3
R56	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456 5
R57	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491 2
ST1	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 7
ST1	0,080	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
ST2	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 7
ST2	0,080	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
ST3	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 7
ST3	0,080	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
ST4	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 7
ST4	0,080	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
ST5	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 7
ST5	0,080	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
TP0	2,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152 6
TP1 à TP2	0,120	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348 8
X1	1,000	QUARTZ 16.00000 MHZ RESO.SERIERESONANCE SERIE	HC-18/U	859540 10
Z101	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276 8

Etabli:
Biemmi

Date:
06/06/90

Vérifié:

SIGMA 1

PCA SCON 2 SIGMA 1
861286

Repères topologiques

 **KONTRON**
INSTRUMENTS

03 121 N009

004

FEUILLE 2 sur 4FEUILLES

Edi. Dat

Repères	Quantité	DESIGNATION	Reference	Article
Z107	1,000	IC LS 8 BASCULE D DIL20	SN74LS373-N	575038 6
Z108	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z109	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z110	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z111	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z111	1,000	RAM CMOS ST. 8K X8 150NS DIL28	TC5565-PL15	855332 9
Z118	1,000	IC LS 4 OR 2 ENTREE DIL14	SN74LS32-N	507334
Z201	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z202	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 5
Z202	1,000	DAC 08BITS 135NS 0.1 % SPEC.	DAC08-HP	549207 6
Z207 à Z208	2,000	IC LS 8 BUFFER REV.3E. DIL20	SN74LS245-N	796654 8
Z215	1,000	IC STTL 6 INVERSEURS DIL14	SN74S04-N	507237
Z216	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
Z217	1,000	IC LS 4 OR 2 ENTREE DIL14	SN74LS32-N	507334
Z218	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z301	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504 1
Z302	1,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197 7
Z303	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002 7
Z304	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
Z305	1,000	IC LS 4 NAND 2 ENT.CO. DIL14	SN74LS38-N	507342 1
Z306	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
Z307	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828 7
Z309	1,000	IC MOS 8BIT MICROPRO. DIL40	8085A	574880 6
Z309	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828 7
Z310	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z310	1,000	PAL (8+8)E. 6S 3E DIL20	PAL 16L8A-2CN	838772 9
Z311	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z312	1,000	IC MOS 8BIT MICROPRO. DIL40	8085A	574880 6
Z312	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828 7
Z313	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z313	1,000	PAL (8+8)E - 4S+4S LATCH DIL20	PAL 16R4A-2CN	843407 9
Z314	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z315	1,000	IC LS 6 INVERSEURS DIL14	SN74LS04-N	504319
Z316	1,000	SUPPORT DE IC SOUDE POUR DIL14	ICL 143-S6T	532991 5
Z317	1,000	IC LS 4X2A1 SELEC. MUX.DIL16	SN74LS157-N	507431 1
Z318	1,000	IC LS 2X2A4 DECO.DEMUX.DIL16	SN74LS155-N	549428 6
Z401	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504 1
Z402	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z403	1,000	IC FTTL 8 BASCULE D DIL20	74F374-PC	840203 9
Z404	1,000	IC LS 2 NAND 4 ENTREE DIL14	SN74LS20-N	575992 7
Z405	1,000	IC LS 4 NOR 2 ENTREES DIL14	SN74LS02-N	507288
Z406	1,000	IC LS 4 NAND 2 ENT.CO. DIL14	SN74LS38-N	507342 1
Z410	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z411	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504 1
Z413	1,000	IC LS 8 BUFFER REV.3E. DIL20	SN74LS245-N	796654 8
Z414	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z414	1,000	PAL (8+8)E. 6S 3E DIL20	PAL 16L8A-2CN	838772 9
Z415	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z415	1,000	PAL (8+8)E. 6S 3E DIL20	PAL 16L8A-2CN	838772 9
Z416	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002 7
Z417	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z418	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473 1
Z501	1,000	IC LS 6 BUFFER 3E. DIL16	SN74LS365-N	598763 1
Z502 à Z503	2,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z504	1,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197 7

Etabli:
Biemmi

Date:
06/06/90

Vérifié:

SIGMA 1

PCA SCON 2 SIGMA 1
861286

Repères topologiques

 **KONTRON**
INSTRUMENTS

03 121 N009

004

FEUILLE 3 sur 4 FEUILLES

Edi. Da

Repères	Quantité	DESIGNATION	Référence	Article
Z505 à Z508	4,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 6
Z509	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z509	1,000	PREDIFFUSE WGA3 DIL28	L5A0609	859591 10
Z510	1,000	IC LS 8 BUFFER REV.3E. DIL20	SN74LS245-N	796654 8
Z511	1,000	IC LS 8 BASCULE D DIL20	SN74LS373-N	575038 6
Z512	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z513	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z514	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z515	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z515	1,000	NOVRAM 8 K X8 200NS DIL28	DS1225-Y	866431 10
Z518	1,000	IC MOS 3 PROG. TIMER DIL24	8253-5	576557
Z518	1,000	SUPPORT DE IC SOUDE POUR DIL24	ICL 246-S7T	578223

Etabli:
Biemmi

Date:
06/06/90

Vérifié:

SIGMA 1

PCA SCON 2 SIGMA 1
861286

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N009

004

FEUILLE 4 sur 4FEUILLES

Edi. Da

Repères	Quantité	DESIGNATION	Reference	Article
99999	4,000	VIS CL M 3 X 6 INOX	18/10	545392 1
99999	2,000	COLONNETTE M3 X18 HEX T CD.BI	ENMET 6	594857 1
99999	1,000	PCB MEMEX	03 121 B202-A	852856 2
C1 à C35	35,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 2
C37 à C78	42,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 2
C79 à C80	2,000	COND.TANT.G 10 UFP 2.5 35V	TAP-SP	517429
J78	1,000	FICHE 41612 M 2/3X32PTS CI D	09 03 164 7922	859656 2
J79	1,000	FICHE 41612 M 2/3X32PTS CI D	09 03 164 7922	859656 2
R1 à R3	3,000	RESEAU SIL 4X 33 OHMS 2% IND	4308R-102-330	814806 2
R4	1,000	RES.COUC 1 OHMS 5% 1/4W	SFR25 L7D2.5	578614
R5	1,000	RES.COUC 15 OHMS 5% 1/4W	CR 25	516007
R6 à R7	2,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R8 à R10	3,000	RES.COUC 33 OHMS 5% 1/4W	CR 25	516031
TP0	5,000	PLOT CI D OEIL H 4.5 SOUD	Y 187	537152
Z101 à Z105	5,000	IC FTTL 4X2A1 SELEC.MUX. DIL16	74F158-PC	855375
Z106	1,000	IC LS 2X1A4 DECO DEMUX DIL16	SN74LS139-N	549401
Z107	1,000	IC LS 4X2A1 SELEC. MUX.DIL16	SN74LS158-N	574953
Z108 à Z109	2,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z110	1,000	IC FTTL 6 BASCULE D DIL16	74F174-PC	843296
Z111	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z111	1,000	PAL (8+8)E. 6S 3E DIL20	PAL 16L8A-2CN	838772
Z112	1,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197
Z113	1,000	IC LS 3 NAND 3 ENTREES DIL14	SN74LS10-N	549339
Z114	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z115 à Z116	2,000	IC FTTL 4X2A1 SELEC.MUX. DIL16	74F158-PC	855375
Z201	1,000	IC LS 6 BASCULE D DIL16	SN74LS174-N	507466
Z202	1,000	IC LS 4X2A1 SELEC. MUX.DIL16	SN74LS158-N	574953
Z203	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z203	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z204 à Z205	2,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z205	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z206	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z206	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z207	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z207	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z208	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z208	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z209	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z209	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z210	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z210	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z211	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z211	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z212	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z212	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z213	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z213	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z214	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z214	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z215	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z215	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z216	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z216	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z217	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z217	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407

Etabli:
Barat

Date:
30/04/90

Vérifié:

SIGMA 1

PCA MEMEX SIGMA 1
852848

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N002


4

FEUILLE 1 sur 3FEUILLES


Edi.

Dé

Repères	Quantité	DESIGNATION	Référence	Article
Z218	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z218	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z301	1,000	IC LS 4X2A1 SELEC. MUX.DIL16	SN74LS158-N	574953
Z303	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z303	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z304	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z304	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z305	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z305	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z306	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z306	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z307	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z307	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z308	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z308	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z309	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z309	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z310	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z310	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z311	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z311	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z312	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z312	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z313	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z313	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z314	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z314	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z315	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z315	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z316	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z316	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z317	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z317	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z318	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z318	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z401 à Z402	2,000	IC LS 4X2A1 SELEC. MUX.DIL16	SN74LS158-N	574953
Z403	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z403	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z404	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z404	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z405	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z405	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z406	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z406	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z407	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z407	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z408	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z408	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z409	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z409	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z410	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z410	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z411	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z411	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z412	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983

Etabli: Barat	SIGMA 1 PCA MEMEX SIGMA 1 852848 Repères topologiques		
Date: 30/04/90		03 121 N002	4
Vérifié:		FEUILLE 2 sur 3 FEUILLES	Edi. Da

Repères	Quantité	DESIGNATION	Référence	Article
Z412	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z413	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z413	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z414	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z414	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z415	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z415	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z416	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z416	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z417	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z417	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z418	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z418	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z510	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z510	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z511	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z511	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z512	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z512	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z513	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z513	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z514	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
Z514	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z515	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z515	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z516	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z516	1,000	RAM MOS DY.64K X1 150NS DIL16	HM4864-P2	855553
Z517	1,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197
Z518	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z519 à Z520	2,000	IC LS 4X2 A 1 MUX. 3E. DIL16	SN74LS257-N	507482

Etabli: Barat	SIGMA 1 PCA MEMEX SIGMA 1 852848 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 30/04/90		03 121 N002	4
Vérifié:		FEUILLE 3 sur 3FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Référence	Article
50	3,000	VIS CL M 3 X 6 INOX	18-10	545392 4
51	3,000	ECROU HU M 3 INOX	18-10	355747
52	3,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647 6
53	1,000	DISSIPATEUR POUR TO220	03 124 A503-1	863513 8
54	3,000	ENTRETOISE CLIP VIS D4 H12.7	MSCBS-08R	864595 9
55	3,000	ECROU H M 4 NYLON		546100 9
150	0,040	1M TISFLON ADHESIF RLX 16,50M	181 25 L15MM	882828 9
151	1,000	SUPPORT DE PILE R14 POUR CI	2230	850861 8
152	1,000	BAGUE DE SECURITE POUR 2230	59	853461 8
BUZ1	1,000	ALARME SONORE OSC.3.5KHZ D23	EB20E-35C	839078 7
C1 à C2	2,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 3
C3 à C6	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C7	1,000	COND.CERA.R 33 PF 2 % 100 V	680 10 339-P2.5	517046 3
C8	1,000	COND.CERA.R 33 PF 2 % 100 V	680 10 339-P2.5	517046 3
C9	1,000	COND.CERA.R 15 PF 2 % 100 V	680 10 159-P2.5	517011 3
C10	1,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 5
C11	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C12 à C18	7,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C19	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C20	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C21	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C22 à C25	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C26	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 3
C27	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C28	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C29	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 3
C30 à C32	3,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 3
C33	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C34	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C35	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 3
C36 à C39	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 6
C40	1,000	COND.ELEC.A 1000UF 16V	CMF-FP	790435
C41	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2.5	510955
CR1	1,000	DIODE ZEN. 3.3V 5% 0.5W DO35	BZX55 C3V3	817201
CR2 à CR4	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR5	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
CR6	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR7	1,000	DIODE ZEN. 24V 5% 0.5W DO35	BZX55 C24	831808
CR8	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
FIL1	0,030	FIL ETFE WRAP.VERT 0.13MM2	WZT 2601	574325
J85	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J810	1,000	EMBASE HE10 VER M 2X20PTS CI C	65B EV 40M6 YCM	504238
J811	1,000	EMBASE HE10 VER M 2X08PTS CI C	3408-1203	598496
J812	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J815	1,000	EMBASE HE10 VER M 2X13PTS CI C	65B EV 26M6 YCM	575240
J818	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J819	1,000	EMBASE MATENLOK F 1X03PTS CI D	350789-1	842745
J822	1,000	EMBASE MATENLOK F 3X05PTS CI D	350714-1	815683
J826	1,000	EMBASE MATENLOK F 2X03PTS CI D	350711-1	842753
NAP1	1,000	NAPPE HE10-HE10 40PTS L=4,7 CM	RB 10001	816515
PCA1	1,000	PCA PARSIO	03 121 N007	854972
PCB1	1,000	PCB PERIP	03 121 B206-B	854964
Q1	1,000	INTERCALAIRE TO 5 H 3	DE 006	537101
Q1	1,000	TRAN.PNP 80V 1A 0.8W TO 5	2N4033	597007
Q2	1,000	TRAN.PNP 60V 0.6A 0.4W TO 18	2N2907A	511390

Etabli:
Biemmi

Date:
27/07/90

Vérifié:

SIGMA 1

PCA PERIP
854956

Repères topologiques

 **KONTRON**
INSTRUMENTS

03 121 N006

008

FEUILLE 1 sur 3FEUILLES

Edi. D

Repères	Quantité	DESIGNATION	Référence	Article
50	3,000	VIS CL M3 X 6 INOX	18/10	545392
51	3,000	ECROU HU M3 INOX	18/10	355747
52	3,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
53	1,000	DISSIPATEUR POUR TO220	03 124 A503- 1	863513
54	3,000	ENTRETOISE CLIP VIS D4 H12,7	MSCBS-08R	864595
55	3,000	ECROU H M4 NYLON		546100
150	0,040	1M TISFLON ADHESIF RLX 16,50M	181 25 L15MM	882828
151	1,000	SUPPORT DE PILE R14 POUR CI	2230	850861
152	1,000	BAGUE DE SECURITE POUR 2230	59	853461
BUZ1	1,000	ALARME SONORE OSC.3,5KHZ D23	EB20E-35C	839078
C1 à C2	2,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C3 à C6	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C7	1,000	COND.CERA.R 33 PF 2 % 100 V	680 10 339-P2.5	517046
C8	1,000	COND.CERA.R 33 PF 2 % 100 V	680 10 339-P2.5	517046
C9	1,000	COND.CERA.R 15 PF 2 % 100 V	680 10 159-P2.5	517011
C10	1,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646
C11	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C12 à C18	7,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C19	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C20	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C21	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C22 à C25	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C26	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C27	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C28	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C29	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C30 à C32	3,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C33	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C34	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C35	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C36 à C39	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C40	1,000	COND.ELEC.A 1000UF 16V	CMF-FP	790435
C41	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2.5	510955
CR1	1,000	DIODE ZEN. 3.3V 5% 0.5W DO35	BZX55 C3V3	817201
CR2 à CR4	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR5	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
CR6	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR7	1,000	DIODE ZEN. 24V 5% 0.5W DO35	BZX55 C24	831808
CR8	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
FIL1	0,030	FIL ETFE WRAP. VERT 0.13MM2	WZT 2601	574325
J85	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J810	1,000	EMBASE HE10 VER M 2X20PTS CI C	65B EV 40M6 YCM	504238
J811	1,000	EMBASE HE10 VER M 2X08PTS CI C	3408-1203	598496
J812	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J815	1,000	EMBASE HE10 VER M 2X13PTS CI C	65B EV 26M6 YCM	575240
J818	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499
J819	1,000	EMBASE MATENLOK F 1X03PTS CI D	350789-1	842745
J822	1,000	EMBASE MATENLOK F 3X05PTS CI D	350714-1	815683
J826	1,000	EMBASE MATENLOK F 2X03PTS CI D	350711-1	842753
NAP1	1,000	NAPPE HE10-HE10 40PTS L=4,7 CM	RB 10001	816515
PCA1	1,000	PCA PARSIO	03 121 N007	854972
PCB1	1,000	PCB PERIP	03 121 B206-B	854964
Q1	1,000	INTERCALAIRE TO 5 H3	DE 006	537101
Q1	1,000	TRAN.PNP 80V 1A 0.8W TO 5	2N4033	597007
Q2	1,000	TRAN.PNP 60V 0.6A 0.4W TO 18	2N2907A	511390

Etabli:
Biemmi

Date:
27/07/90

Vérifié:

SIGMA 1

PCA PERIP
854956

Repères topologiques

 **KONTRON**
INSTRUMENTS


03 121 N006

008

FEUILLE 1 sur 3FEUILLES

Edi. D:

Repères	Quantité	DESIGNATION	Reference	Article
Q2	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413 9
Q3 à Q5	3,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 5
Q6	1,000	TRAN.NPN 15V 0.2A 0.4W TO 18	2N2369A	511374 2
Q6 à Q8	3,000	INTERCALAIRE TO 18 H 2	DE 011	716413 6
Q7 à Q8	2,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366 2
R1	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R2	1,000	RES.COUC 487 OHMS 1% 1/8W	MRS 25	518255 3
R3	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378 1
R4	1,000	RES.COUC 150 OHMS 5% 1/4W	CR 25	516112 2
R5	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319 1
R6	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602 2
R7	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R8	1,000	RES.COUC 10 MOHMS 10% 1/4W	CR 25	526991 4
R9	1,000	RES.COUC 150 KOHMS 5% 1/4W	CR 25	516279 3
R10	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R11	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R12	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319 1
R13	1,000	POT.CERMET 20KOHMS HORI.25 TR	64X-203	815276 7
R14 à R15	2,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R16	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R17	1,000	RES.COUC 2.05KOHMS 1% 1/8W	MRS 25	518573 3
R18 à R21	4,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R22	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R23	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R24	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R25	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R26	1,000	RES.COUC 1.5 KOHMS 5% 1/4W	CR 25	510416 1
R27	1,000	RES.COUC 680 OHMS 5% 1/4W	CR 25	516120 3
R28 à R29	2,000	RES.COUC 10 KOHMS 1% 1/8W	MRS 25	510106 1
R30	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 2
R31 à R32	2,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R33	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254 1
R34	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610 2
R35	1,000	RES.COUC 220 KOHMS 5% 1/4W	CR 25	516295 3
R36	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R37	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R38	1,000	CTN 470 OHMS 10% 4.1%/PK1/2W	CTN642-62-471	859508 8
R39	1,000	RES.COUC 1.78KOHMS 1% 1/8W	MRS 25	518549 1
R40	1,000	RES.COUC 487 OHMS 1% 1/8W	MRS 25	518255 1
R41	1,000	RES.COUC 2.61KOHMS 1% 1/8W	MRS 25	518638 4
R42	1,000	RES.COUC 487 OHMS 1% 1/8W	MRS 25	518255 1
R43	1,000	RES.COUC 1.05KOHMS 1% 1/8W	MRS 25	518425 1
R44	1,000	RESEAU SIL 9X 10 KOHMS 2% COM	4310R-101-103	549169 4
R45	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R46	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408 1
R47	1,000	RESEAU SIL 9X 10 KOHMS 2% COM	4310R-101-103	549169 4
R48	1,000	RESEAU SIL 5X 47 KOHMS 2% COM	4306R-101-473	790761 1
R49	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319 1
R50	1,000	RES.COUC 3.3 KOHMS 5% 1/4W	CR 25	510475 1
R51 à R52	2,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 1
R53	1,000	RES.BOB. 1 OHMS 5% 2.6W	RB 59	731358 1
S1	1,000	POUSOIR UNI R.M C1C	8125-S-D9-A-B-E	501034 1
ST1	1,000	CAVALIER D 1 P 5.08 DORE	DCA 001	711462 1
ST1	2,000	PLOT C1D TEST D 1 H 6.9 SOUD	DP 022 AU	711829 1
ST2	1,000	CAVALIER D 1 P 5.08 DORE	DCA 001	711462 1

Etabli: Biemmi	SIGMA 1 PCA PERIP 854956 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 27/07/90		03 121 N006	008
Vérifié:		FEUILLE 2 sur 3 FEUILLES	Edi. Da

Repères	Quantité	DESIGNATION	Reference	Article
ST2	3,000	PLOT C I D TEST D 1 H 6.9 SOUD	DP 022 AU	711829 6
TP0	4,000	PLOT C I D OEIL H 4.5 SOUD	Y 187	537152 4
TP1 à TP2	2,000	PLOT C I D OEIL H 4.5 SOUD	Y 187	537152 4
X1	1,000	QUARTZ 32.76800 KHZ HORLOGE	MDX-38	842567 7
Z101	1,000	IC LS 4 NOR 2 ENTREES DIL14	SN74LS02-N	507288
Z102	1,000	IC LS DECODEUR OCTAL DIL16	SN74LS138-N	507423 1
Z103	1,000	IC LS 8 BASCULE D DIL20	SN74LS373-N	575038 4
Z104	1,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197 5
Z105	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 4
Z106	1,000	SUPPORT DE IC SOUDE POUR DIL24	ICL 246-S7T	578223 5
Z106	1,000	IC CMOS GEN.HORL. DIL24	MC146818-P	855359 6
Z107 à Z108	2,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 5
Z109	1,000	IC REF TENSION 10V 0.3 % TO 99	REF 01-CJ	734322 6
Z201	1,000	IC LS 4 NAND 2 ENT.CO. DIL14	SN74LS38-N	507342 1
Z202	1,000	IC LS 4 OR 2 ENTREE DIL14	SN74LS32-N	507334
Z203	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z204	1,000	IC LS 2 MONOST.RETRIG. DIL16	SN74LS123-N	500437
Z205	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z205	1,000	ADC 08BITS 8VOIES BUS UP DIL28	AD7581LN	838667
Z206	1,000	REGUL.POS.AJUS.1.5A 15W TO220	LM317-T	598658
Z207 à Z208	2,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z207 à Z208	2,000	IC MOS INTERF.CLAVIER-AFFICH.	8279-5	836214
Z301	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z301	1,000	PAL (8+8)E - 4S+4S LATCH DIL20	PAL 16R4A-2CN	843407
Z301 à Z302	2,000	MEM. TCKB SP630025-1	PAL16R4	858749
Z302	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z302	1,000	PAL (8+8)E - 4S+4S LATCH DIL20	PAL 16R4A-2CN	843407
Z303 à Z304	2,000	IC LS DECODEUR OCTAL DIL16	SN74LS138-N	507423
Z305	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335

Etabli:
Biemmi

Date:
27/07/90

Vérifié:

SIGMA 1

PCA PERIP
854956

Repères topologiques



KONTRON
INSTRUMENTS


03 121 N006

008


FEUILLE 3 sur 3 FEUILLES

Edi. D

Repères	Quantité	DESIGNATION	Reference	Article
150	2,000	INTERCALAIRE TO 5 TO 18 H 4.4	DE 020	537071 2
151	1,000	COLONNETTE M3 X25 HEX T CD.BI	ENMET 6	716316 3
152	2,000	VIS C M 3 X 8 INOX	18/10	354309
153	1,000	RONDELLE 3.8X 5.8X0.7 NYLON		594954 2
154	1,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647 3
155	1,000	SUPPORT POTENTIOMETRES SIGMA 1	03 115 A501-1	858439 5
156	1,000	PCB COMPHO	03 120 B205-C	854794 4
158	0,250	COAXIAL 50 OHMS .054MM2 D 1.8	RG 178 BU	704512 3
159	1,000	MANCHON AUTOSOUDEUR/COAX D=2.2	B044-14	573701 2
160	0,020	GAINÉ RETRACT. BLANC.D 4,8 MM	SFM-48	717703 3
99999	1,610	FIL ISOLE SOUP.BLEU 0,34MM2	KY 30-05	525340 1
99999	0,630	FIL ISOLE SOUP.NOIR 0,34MM2	KY 30-05	525359 1
99999	1,430	FIL ISOLE SOUP.ROUGE 0,34MM2	KY 30-05	525367 2
99999	0,520	PAIRE SOUP.BLANC/NOIR 0,22MM2	2 X KY 30-04	574309 2
99999	0,450	FIL ISOLE SOUP.JAUNE 0,34MM2	KY 30-05	590665 2
99999	0,260	FIL ISOLE SOUP.VIOLET 0,22MM2	KY 30-04	850896 4
99999	0,260	FIL ISOLE SOUP.GRIS 0,22MM2	KY 30-04	861863 5
99999	0,260	FIL ISOLE SOUP.VERT 0,22MM2	KY 30-04	861898 5
C1	1,000	COND.TANT.G 2,2UF P 2,5 35V	TAP-SP	517410 1
C2	1,000	COND.ELEC.D 470UF P 5 16V	SEM1C471AD10H12	527297 2
C3	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C4	1,000	A STOCK NUL UTILISER 411604	SEM1E470 D5H11	537489 2
CR1	1,000	DIODE SCH. 60V 15MA 0,4W DO35	1N6263	549495 2
CR2	1,000	DIODE RED. 225V 0,4A 0,6W DO29	1N645	511994 1
CR3	1,000	LED VERTE D 5,08 T1 3/4	MV64530	734233 3
J0	1,000	EMBASE ENCLIQU. M COAXIAL CI D	KMC12	839140 3
J5	1,000	EMBASE HE14 VER M 1X10PTS CI D	320-10-1-YO-1	876011 6
J6	1,000	EMBASE HE14 VER M 1X08PTS CI D	320-08-1-YO-1	862096 5
J7	1,000	EMBASE HE14 VER M 1X02PTS CI D	320-02-1-YO-1	866768 5
J8	1,000	EMBASE HE14 VER M 1X02PTS CI D	320-02-1-YO-1	866768 5
J17	1,000	EMBASE P2.5 VER F 1X02PTS CI D	2.5MSF 2 MBX	857807 4
K1	1,000	ETRIER TAILLE 2 / RELAIS N-S-P	V 23154 Z 1022	502065
K1	1,000	SUPPORT RELAIS POUR CI C 4 RT	C42334A0272A003	857378 4
K1	1,000	RELAIS ELEC.14DC 4RT 50VA EMBR	V23154D719B110	857432 4
P2	1,000	FICHE ENCLIQU. F COAXIAL D	KMC1	842028 3
P3	1,000	FICHE P2.5 VER M 1X07PTS NAPP	2.5MBX.7	860107 5
P4	1,000	FICHE P5.08 F 1X03PTS SOUD	MGF4403-1-0-303	861510 5
P5	1,000	BOITIER HE14 1X10PTS V	310-10-1-X0	870927 5
P6	1,000	BOITIER HE14 1X08PTS V	310-08-1-X0	862118 5
P7 à P8	2,000	BOITIER HE14 1X02PTS V	310-02-1-X0	866776 5
P58	21,000	DOUILLE HE14 SN SERT.0.08A0.6	310C119	855448 4
P826	6,000	DOUILLE MNL SN SERT.0.2 A 0,9	926895-3	596876 4
P826	1,000	BOITIER MATNLOK M.06PTS 6,35 V	350715-1	842761 4
P1325	2,000	CONTACT H 816AU SERT.0.05A0.6	816C102	834211 4
P1325	1,000	BOITIER HERMAPHROD.3PTS 5,08	820I001	857920 4
P2325	2,000	CONTACT H 816AU SERT.0.05A0.6	816C102	834211 4
P2325	1,000	BOITIER HERMAPHROD.3PTS 5,08	820I001	857920 4
Q1	1,000	TRAN.NPN 30V 0,8A 0,4W TO 18	2N2222A	511366
Q2	1,000	TRAN.PNP 60V 0,6A 0,4W TO 18	2N2907A	511390
R1	1,000	RES.CO.U.M 20 KOHMS 1% 1/8W	MRS 25	519812
R2	1,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R3	1,000	RES.CO.U.C 330 OHMS 5% 1/4W	CR 25	510343
R4 à R5	2,000	RES.CO.U.C 100 OHMS 5% 1/4W	CR 25	510289
R6	1,000	RES.CO.U.M 110 OHMS 1% 1/8W	MRS 25	517917
R7	1,000	RES.CO.U.M 100 OHMS 1% 1/8W	MRS 25	517895

Etabli: Barat	SIGMA 1 PCA COMPHO 854786 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 13/12/90		03 120 N005	006
Vérifié:		FEUILLE 1 sur 2FEUILLES	Edi. Da

Repères	Quantité	DESIGNATION	Référence	Article
R8	1,000	RES.COUC 68 OHMS 5% 1/4W	CR 25	516074 1
R9	1,000	RES.COUC 1,2 KOHMS 5% 1/4W	CR 25	516147 1
R10	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R11	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R12	1,000	POT.100KOHMS 6 X32 LOI A	PAK16-S6-32-20%	857386 4
R13	1,000	POT.100KOHMS 6 X25CIC LOI A	PK12CIH625100KA	839124 3
R14	1,000	POT.100 OHMS 6 X32 LOI A	PAK16-S6.32.20%	857440 4
R15	1,000	POT.100 OHMS 6 X25CIC LOI A	PK12CIH625100UA	839116 3

Etabli:	SIGMA 1 PCA COMPHO 854786 Repères topologiques	 KONTRON INSTRUMENTS	
Barat			
Date:		03 120 N005	006
Vérifié:		FEUILLE 2 sur 2 FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Référence	Article
99999	1,000	PCB PARSIO	03 121 B207-B	854999 21
C1	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2.5	510955 5
C2 à C3	2,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C4	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C5	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 16
C6	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 16
C7	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C8	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C9	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 16
C10	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 16
C11	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 16
C12	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C13	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
C14	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429 6
C15	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 20
J912	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499 19
J913	1,000	EMBASE HE10 VER M 2X13PTS CI D	65B EV 26M6 YM	598518 19
J914	1,000	EMBASE HE10 VER M 2X20PTS CI D	65B EV 40M6 YM	803499 19
R1	1,000	RES.COUC 10 MOHMS 10% 1/4W	CR 25	526991 7
R2	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491 7
R3 à R6	4,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513 7
S1	0,500	MICRO INTERREP. 1 T DIL16	C42315A1347A108	859648 29
TP0	2,000	PLOT CI D OEIL H 4.5 SOUD	Y 187	537152 16
X1	1,000	QUARTZ 2,45760 MHZ RESO.SERIERESONANCE SERIE	HC-18/U	859559 27
Z102	1,000	IC LS 4 OR 2 ENTREE DIL14	SN74LS32-N	507334 7
Z103	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002 19
Z201	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 1
Z201	1,000	GENE.A VITESSE PROGRAM. DIL16	F 4702B-PC	855308 27
Z202	1,000	SUPPORT DE IC SOUDE POUR DIL14	ICL 143-S6T	532991 1
Z202	1,000	IC TTL 4 L.DRIVER RECEP.DIL14	SN75189-N	549487 19
Z203	1,000	IC LS 8 BUFFER REV.3E. DIL20	SN74LS245-N	796654 19
Z302	1,000	SUPPORT DE IC SOUDE POUR DIL14	ICL 143-S6T	532991 1
Z302	1,000	IC TTL 4 L.DRIVER EMETE.DIL14	SN75188-N	549479 19
Z303	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542 1
Z303	1,000	IC MOS INTERF. SERIE # DIL28	8251A	798452 1

Etabli:
Biemmi

Date:
27/07/90

Vérifié:

SIGMA 1

PCA PARSIO
854972

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N007

003

FEUILLE 1 sur 1 FEUILLES

Edi.

Dat

+REPERE	+QUANTITE	+DESIGNATION	+REFERENCE	+ARTICLE
+CR1	+1,000	+DIODE ZEN. 3,9V 5% 0,5W D035	+BZX55 C3V9	+527491
+C01	+1,000	+COND.CERA.R 100 PF 2 % 100 V	+680 10 101-P2,5	+510955
+C02	+1,000	+COND.TANT.G 4,7UF P 2,5 35V	+TAP-SP	+709646
+C03	+1,000	+COND.CERA.R 10 NF-20+80 63 V	+629 08 103-P2,5	+511005
+C04	+1,000	+COND.CERA.R 10 NF-20+80 63 V	+629 08 103-P2,5	+511005
+C05	+1,000	+COND.CERA.R 10 NF-20+80 63 V	+629 08 103-P2,5	+511005
+C06	+1,000	+COND.CERA.R 220 PF 2 % 100 V	+680 58 221-P2,5	+517097
+C07	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C08	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C09	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C10	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C11	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C12	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C13	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C14	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C15	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C16	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C17	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C18	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C19	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C20	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C21	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C22	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C23	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C24	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C25	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C26	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C27	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C28	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C29	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C30	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C31	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C32	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C33	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C34	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C35	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C36	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C37	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C38	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C39	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C40	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C41	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C42	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C43	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C44	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C45	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C46	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C47	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C48	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+C49	+1,000	+COND.FILM R 100 NF20% 63 VDC	+MKT1817 P 5	+812218
+ETABLI	+SIGMA 1	+KONTRON		
+BIEMMI				
+DATE				
+27.10.89	+FCA FIST			
+VERIFIE				
	+852864	+03 121 N003	+4	+10/89
+ CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT +				
+ OU COMMUNIQUE SANS AUTORISATION ECRITE. + 1				

REFERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
J54	1,000	EMBASE HE10 VER M 2X25PTS CI C	65B EV 50M6 YCM	850659
J56	1,000	EMBASE HE10 VER M 2X08PTS CI C	3408-1203	598496
L1	1,000	SELF N.B 47UH10% 4R5 110MA	1025-60 L7D2,5	579971
L2	1,000	SELF N.B 10UH 1 A	VK 200 2,5 3B	702285
Q1	1,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
Q2	1,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
R01	1,000	RESEAU SIL 5X 4,7KOHMS 2% COM	4306R-101-472	815292
R02	1,000	RESEAU SIL 5X 4,7KOHMS 2% COM	4306R-101-472	815292
R03	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R04	1,000	RESEAU SIL 4X 33 OHMS 2% IND	4308R-102-330	814806
R05	1,000	RESEAU SIL 4X 33 OHMS 2% IND	4308R-102-330	814806
R06	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R07	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R08	1,000	RES.COUC 130 OHMS 5% 1/4W	CR 25	509221
R09	1,000	RES.COUC 16,2 OHMS 1% 1/8W	MR 25	870242
R10	1,000	RES.COUC 16,2 OHMS 1% 1/8W	MR 25	870242
R11	1,000	POT.CERMET 1KOHMS VERT.25 TR	64W-102	517682
R12	1,000	RES.COUC 22 OHMS 5% 1/8W	CR 16	817473
R13	1,000	RES.COUC 15 OHMS 5% 1/4W	CR 25	516007
R14	1,000	RESEAU SIL 4X 33 OHMS 2% IND	4308R-102-330	814806
R15	1,000	RESEAU SIL 4X 33 OHMS 2% IND	4308R-102-330	814806
TP0-8	0,250	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
TP00	4,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP09	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP10	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
Z101	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002
Z102	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z102	1,000	IC MOS INTERF.PERIF. DIL40	8255A-5	798444
Z103	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z104	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z106	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z106	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z107	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z107	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z108	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z108	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z109	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z109	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z110	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z110	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z111	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z111	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z112	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
Z112	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z113	1,000	IC LS 4 AND 2 ENTREES DIL14	SN74LS08-N	504327
Z114	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276
Z114	1,000	ADC 06BITS 66NS FLASH DIL18	CA3306-E	838675
Z115	1,000	IC FTTL 8 BUFFER 3E DIL20	74F244-PC	855626
Z116	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
Z117	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002

ETABLI	SIGMA 1	KONTRON
RIEMMI		
DATE		
27.10.89	+PCA FIST	
VERIFIE		
	852864	03 121 N003 + 4 + 10/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT		
OU COMMUNIQUE SANS AUTORISATION ECRITE.		
		2

REPERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
+Z201	1,000	IC LS 4 OR 2 ENTREE DIL14	SN74LS32-N	507334
+Z202	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
+Z203	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
+Z204	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
+Z206	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z206	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z207	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z207	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z208	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z208	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z209	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z209	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z210	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z210	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z211	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z211	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z212	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
+Z212	1,000	RAM MOS DY.64K X1 120NS DIL16	TMM4164-AP12	866407
+Z214	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276
+Z214	1,000	PROM STTL 1K X4 35NS DIL18	63S441A-N	866423
+Z215	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276
+Z215	1,000	PROM STTL 1K X4 35NS DIL18	63S441A-N	866423
+Z216	1,000	IC FTTL ADD.BIN. 4BITS DIL16	74F283-PC	855383
+Z217	1,000	IC FTTL ADD.BIN. 4BITS DIL16	74F283-PC	855383
+Z301	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
+Z302	1,000	IC LS 4 BASCULE D DIL16	SN74LS175-N	504351
+Z303	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
+Z304	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473
+Z305	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473
+Z306	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473
+Z307	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276
+Z307	1,000	RAM MOS ST. 1K X4 55NS DIL18	AM2148-55DC	838780
+Z308	1,000	SUPPORT DE IC SOUDE POUR DIL18	ICL 183-S6T	728276
+Z308	1,000	RAM MOS ST. 1K X4 55NS DIL18	AM2148-55DC	838780
+Z309	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
+Z310	1,000	IC LS 6 BASCULE D DIL16	SN74LS174-N	507466
+Z311	1,000	IC LS 2X4A1 SELEC. MUX. DIL16	SN74LS153-N	549355
+Z312	1,000	IC LS 2X4A1 SELEC. MUX. DIL16	SN74LS153-N	549355
+Z313	1,000	IC LS 2X4A1 SELEC. MUX. DIL16	SN74LS153-N	549355
+Z314	1,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
+Z316	1,000	IC FTTL 8 BUFFER 3E DIL20	74F244-PC	855626
+Z317	1,000	PROM STTL 512 X8 55NS DIL20	AM27S29PC	838624
+Z317	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
+Z401	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002
+Z402	1,000	IC LS 4 BASCULE D DIL16	SN74LS175-N	504351
+Z403	1,000	IC LS REGI.DECAL.8 BIT DIL14	SN74LS164-N	576018
+Z404	1,000	IC STTL 4NOR 2 ENTREES DIL14	SN74S02-N	855405
+Z405	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
+Z406	1,000	IC STTL 3 NAND 3 ENTREE DIL14	SN74S10-N	574457
+Z407	1,000	IC STTL 3 NAND 3 ENTREE DIL14	SN74S10-N	574457
ETABLI				
BIEMMI		SIGMA 1		KONTRON
DATE				
27.10.89		+PCA FIST		
VERIFIE				
		852864	03 121 N003	4 + 10/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT				
OU COMMUNIQUE SANS AUTORISATION ECRITE.				3

[illegible]

Repères	Quantité	DESIGNATION	Reference	Article
99999	2,000	ECROU HU M3 INOX	18/10	355747
99999	1,000	ETIQUETTE SERIE/VERSION C.I	SP680057_1	427721
99999	1,000	INTERCALAIRE TO 5 H 3	DE 006	537101
99999	2,000	VIS CL M3 X 6 INOX	18/10	545392
99999	7,000	INTERCALAIRE TO 18 H 2	DE 011	716413
99999	2,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
99999	5,000	INTERCALAIRE TO100 A DIL H 4,5	MON-10LF	822051
99999	1,000	PCB CARDIS	03 121 B205-B	852937
C1 à C3	3,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C4 à C6	3,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C7	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C8	1,000	COND.CERA.R 2.2NF 10 % 100 V	630 08 222-P2,5	517151
C9	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C10	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2,5	517003
C11	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C13	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C14 à C15	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C18	1,000	COND.CERA.R 12 PF 2 % 100 V	680 10 129-P2,5	578592
C19	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2,5	517097
C20 à C21	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C23	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C25 à C26	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C27	1,000	COND.POLY.R 1 NF 1% 630 VDC	PMR64 PAS 7,62	573531
C28	1,000	COND.TANT.G 1 UF P 2.5 35V	TAP-SP	517402
C29 à C30	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C31	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C32 à C33	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C34	1,000	COND.CERA.R 270 PF 2 % 100 V	680 58 271-P2,5	575569
C35	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2,5	517097
C36	1,000	COND.CERA.R 150 PF 2 % 100 V	680 58 151-P2,5	517089
C37 à C38	2,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C39	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2,5	510955
C40	1,000	COND.FILM R 2.2UF10% 100 VDC	BR7 P22,5	706817
C41	1,000	COND.POLY.R 220 NF 1% 63 VDC	PMR64 PAS 15,24	529710
C42	1,000	COND.POLY.R 100 NF 1% 63 VDC	PMR64 PAS 10	575542
C43	1,000	COND.POLY.R 22 NF 5% 250 VDC	PMR64 PAS 7,62	529575
C44	1,000	COND.POLY.R 10 NF 1% 250 VDC	PMR64 PAS 7,62	819018
C45 à C48	4,000	COND.POLY.R 500 NF 1% 63 VDC	PMR64 PAS 15,24	543675
C49 à C55	7,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C56 à C57	2,000	COND.CERA.R 47 PF 2 % 100 V	680 10 479-P2,5	517054
C58	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2,5	517097
CR1 à CR3	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR4	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
CR5	1,000	DIODE ZEN. 7.5V 5% 0.5W DO35	BZX55 C7V5	817244
CR6 à CR9	4,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR10	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
CR11	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495
J64	1,000	EMBASE HE10 VER M 2X25PTS CI C	65B EV 50M6 YCM	850659
J66	1,000	EMBASE HE10 VER M 2X08PTS CI C	3408-1203	598496
J610	1,000	EMBASE HE10 VER M 2X20PTS CI C	65B EV 40M6 YCM	504238
L1	1,000	SELF N.B 10UH 1 A	VK 200 2 5 38	702285
L2	1,000	SELF N.B 68UH 5% 3R3 176MA	1537-68 L10D 4	574708
Q1 à Q3	3,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366
Q4	1,000	TRAN.PNP 30V 0.2A 0.3W CB 76	BC212-B	593273
Q5	1,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056

Etabli:
Jaku.

Date:
23/06/92

Vérifié:

SIGMA 1

PCA CARDIS
852929

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N005

004

FEUILLE 1 sur 5 FEUILLES

Eti

Repères	Quantité	DESIGNATION	Reference	Article
Q6	1,000	TRAN.PNP 30V 0.2A 0.3W CB 76	BC212-B	593273 1
Q7	1,000	TRAN.NPN 30V 0.8A 0.8W TO 5	2N2219	511358
Q8	1,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366
Q9 à Q10	2,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056 1
Q11	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 1
R1	1,000	RESEAU SIL 5X 1 KOHMS 2% COM	4306R-101-102	812099 1
R2	1,000	RES.COUM 7.87KOHMS 1% 1/8W	MRS 25	518867
R3	1,000	RES.COUM 2 KOHMS 1% 1/8W	MRS 25	519804
R4	1,000	RES.COUM 26,1 KOHMS 1% 1/8W	MRS 25	519111
R5	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R6	1,000	RES.COUM 4.02KOHMS 1% 1/8W	MRS 25	518727
R7	1,000	RES.COUM 14,7 KOHMS 1% 1/8W	MRS 25	518980
R8	1,000	RES.COUM 348 OHMS 1% 1/8W	MRS 25	518182
R9	1,000	RES.COUM 619 OHMS 1% 1/8W	MRS 25	518328
R10	1,000	RES.COUM 3,01KOHMS 1% 1/8W	MRS 25	518662
R11	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R12	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R13	1,000	RES.COUM 82,5 KOHMS 1% 1/8W	MRS 25	510130
R14	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R15 à R16	2,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R17	1,000	RES.COUM 38,3 KOHMS 1% 1/8W	MRS 25	519200
R18	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R20	1,000	RES.COUM 6,49KOHMS 1% 1/8W	MRS 25	518832
R21	1,000	RES.COUM 150 KOHMS 1% 1/8W	MRS 25	793604
R22	1,000	RES.COUM 51,1 KOHMS 1% 1/8W	MRS 25	519251
R23	1,000	RES.COUM 68,1 KOHMS 1% 1/8W	MRS 25	519324
R24	1,000	RES.COUM 3,32KOHMS 1% 1/8W	MRS 25	518689
R25	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R26 à R27	2,000	RES.COUM 68,1 KOHMS 1% 1/8W	MRS 25	519324
R28	1,000	RES.COUM 402 OHMS 1% 1/8W	MRS 25	518212
R29	1,000	RES.COUM 34,8 KOHMS 1% 1/8W	MRS 25	519189
R30	1,000	RES.COUM 562 OHMS 1% 1/8W	MRS 25	518298
R31	1,000	RES.COUM 68,1 KOHMS 1% 1/8W	MRS 25	519324
R32	1,000	RES.COUM 34,8 KOHMS 1% 1/8W	MRS 25	519189
R33 à R34	2,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R35	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378
R36	1,000	RES.COUM 20,5 KOHMS 1% 1/8W	MRS 25	519057
R37	1,000	RES.COUM 1,96KOHMS 1% 1/8W	MRS 25	518565
R38	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R39	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R40	1,000	RES.COUM 15,4 KOHMS 1% 1/8W	MRS 25	518999
R41	1,000	RES.COUM 7,15KOHMS 1% 1/8W	MRS 25	503606
R42	1,000	RES.COUM 17,8 KOHMS 1% 1/8W	MRS 25	519022
R43	1,000	RES.COUC 2,2 KOHMS 5% 1/4W	CR 25	510432
R44	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R45	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602
R46	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R47	1,000	RES.COUM 2 KOHMS 1% 1/8W	MRS 25	519804
R48	1,000	RES.COUM 3,83KOHMS 1% 1/8W	MRS 25	518719
R49	1,000	RES.COUM 19,6 KOHMS 1% 1/8W	MRS 25	519049
R50	1,000	RES.COUM 4,87KOHMS 1% 1/8W	MRS 25	518778
R51	1,000	RES.COUC 220 KOHMS 5% 1/4W	CR 25	516295
R54	1,000	RES.COUC 2,2 KOHMS 5% 1/4W	CR 25	510432
R55	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R56	1,000	RES.COUM 487 OHMS 1% 1/8W	MRS 25	518255

Etabli:
Jaku.

Date:
23/06/92

Vérifié:



SIGMA 1

PCA CARDIS
852929

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N005

004

FEUILLE 2 sur 5 FEUILLES

Edi

Repères	Quantité	DESIGNATION	Reference	Article
R57	1,000	RES.COUC 10 OHMS 5% 1/4W	CR 25	515973
R58	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R59	1,000	RES.COUM 19,6 KOHMS 1% 1/8W	MRS 25	519049
R60	1,000	RES.COUM 3,83KOHMS 1% 1/8W	MRS 25	518719
R61	1,000	RES.COUM 4,87KOHMS 1% 1/8W	MRS 25	518778
R62	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R63	1,000	RES.COUM 53,6 OHMS 1% 1/8W	MRS 25	517755
R64	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R65 à R66	2,000	RES.COUM 487 OHMS 1% 1/8W	MRS 25	518255
R67	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R68	1,000	RES.COUM 7,5 KOHMS 1% 1/8W	MRS 25	510084
R69	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R70	1,000	RESEAU SIL 5X 10 KOHMS 2% COM	4306R-101-103	576263 1
R71	1,000	RES.COUM 1,96KOHMS 1% 1/8W	MRS 25	518565
R72	1,000	RES.25PPM 10 KOHMS 1% 1/8W	58M	862053 1
R73	1,000	RES.COUM 3,48KOHMS 1% 1/8W	MRS 25	518697
R74	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R75	1,000	RES.COUC 2,2 KOHMS 5% 1/4W	CR 25	510432
R76 à R77	2,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R78 à R79	2,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R80 à R81	2,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R82	1,000	RES.COUC 470 KOHMS 5% 1/4W	CR 25	516333
R83	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R84	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R85	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R86	1,000	RES.COUC 470 KOHMS 5% 1/4W	CR 25	516333
R87 à R88	2,000	RES.COUM 12,7 KOHMS 1% 1/8W	MRS 25	518956
R89 à R90	2,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R91 à R92	2,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R93	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R94	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R95	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R96	1,000	RES.COUM 3,01KOHMS 1% 1/8W	MRS 25	518662
R97	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R98	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R100	1,000	RES.COUM 95,3 KOHMS 1% 1/8W	MRS 25	519383
R101	1,000	RES.COUM 1,54KOHMS 1% 1/8W	MRS 25	518514
R102 à R104	3,000	RES.COUM 332 OHMS 1% 1/8W	MRS 25	518174
R105	1,000	RES.COUM 9,53KOHMS 1% 1/8W	MRS 25	518891
R106 à R107	2,000	RES.COUC 680 OHMS 5% 1/4W	CR 25	516120
R108 à R109	2,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R110	1,000	RES.COUM 4,87KOHMS 1% 1/8W	MRS 25	518778
R111	1,000	RES.COUM 9,53KOHMS 1% 1/8W	MRS 25	518891
R112	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R113	1,000	RES.COUM 7,87KOHMS 1% 1/8W	MRS 25	518867
R114	1,000	RES.COUM 3,01KOHMS 1% 1/8W	MRS 25	518662
R115	1,000	RES.COUM 1,47KOHMS 1% 1/8W	MRS 25	518506
R116	1,000	RES.COUM 953 OHMS 1% 1/8W	MRS 25	518417
R117	1,000	RES.COUM 649 OHMS 1% 1/8W	MRS 25	518336
R118	1,000	RES.COUC 2,2 KOHMS 5% 1/4W	CR 25	510432
R119 à R120	2,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R121	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R122	1,000	RES.COUM 649 OHMS 1% 1/8W	MRS 25	518336
R123	1,000	RES.COUC 330 OHMS 5% 1/4W	CR 25	510343
R124 à R127	4,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289

Etabli:
Jaku.

Date:
23/06/92

Vérifié:



SIGMA 1

PCA CARDIS
852929

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N005

004

FEUILLE 3 sur 5 FEUILLES

Edi. D

Repères	Quantité	DESIGNATION	Reference	Article
R128	1,000	RES.CO.U.C 3.3 KOHMS 5% 1/4W	CR 25	510475
R129	1,000	RES.CO.U.M 44.2 OHMS 1% 1/8W	MRS 25	798649 1
R130	1,000	RES.CO.U.C 3.3 KOHMS 5% 1/4W	CR 25	510475
R131	1,000	RES.CO.U.C 150 KOHMS 5% 1/4W	CR 25	516279
R132 à R133	2,000	RES.CO.U.M 5.11KOHMS 1% 1/8W	MRS 25	518786
R134	1,000	RES.CO.U.M 26.1 KOHMS 1% 1/8W	MRS 25	519111
R135	1,000	RES.CO.U.M 6.19KOHMS 1% 1/8W	MRS 25	518824
R136 à R137	2,000	RES.CO.U.C 220 OHMS 5% 1/4W	CR 25	510319
R138	1,000	RES.CO.U.C 100 OHMS 5% 1/4W	CR 25	510289
R139 à R140	2,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053 1
R141	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037 1
R142	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R143 à R144	2,000	RES.CO.U.C 220 OHMS 5% 1/4W	CR 25	510319
R145 à R146	2,000	RES.CO.U.M 6.19KOHMS 1% 1/8W	MRS 25	518824
R147	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R148	1,000	RES.CO.U.M 1 KOHMS 1% 1/8W	MRS 25	510033
R149	1,000	RES.CO.U.C 22 OHMS 5% 1/4W	CR 25	516015
R150	1,000	RES.CO.U.C 330 OHMS 5% 1/4W	CR 25	510343
R151	1,000	RES.CO.U.M 1.78KOHMS 1% 1/8W	MRS 25	518549
R152	1,000	RES.CO.U.M 249 OHMS 1% 1/8W	MRS 25	518107
R153	1,000	RES.CO.U.M 1.78KOHMS 1% 1/8W	MRS 25	518549
R154	1,000	RES.CO.U.M 249 OHMS 1% 1/8W	MRS 25	518107
R155	1,000	RES.CO.U.C 470 OHMS 5% 1/4W	CR 25	510378
R156	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R157 à R158	2,000	POT.CERMET 100 OHMS VERT.25 TR	64W-101	516872
R159 à R160	2,000	POT.CERMET 1KOHMS VERT.25 TR	64W-102	517682
R161	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R162 à R163	2,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R164	1,000	RES.CO.U.M 1 KOHMS 1% 1/8W	MRS 25	510033
R165	1,000	RES.CO.U.C 330 KOHMS 5% 1/4W	CR 25	516317
R166	1,000	POT.CERMET 100KOHMS VERT.25 TR	64W-104	525502
R167	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R168	1,000	RES.CO.U.C 27 KOHMS 5% 1/4W	CR 25	516201
ST1	1,000	CAVALIER D1 P 5.08 DORE	DCA 001	711462 1
ST1	3,000	PLOT CID TEST D1 H 6.9 SOUD	DP 022 AU	711829 1
ST2	1,000	CAVALIER D1 P 5.08 DORE	DCA 001	711462 :
ST2	4,000	PLOT CID TEST D1 H 6.9 SOUD	DP 022 AU	711829 :
ST3	1,000	CAVALIER D1 P 5.08 DORE	DCA 001	711462 :
ST3	2,000	PLOT CID TEST D1 H 6.9 SOUD	DP 022 AU	711829 :
TP0	7,000	PLOT CID OEIL H 4.5 SOUD	Y 187	537152
TP1'	1,000	PLOT CID OEIL H 4.5 SOUD	Y 187	537152
TP2 à TP4	3,000	PLOT CID OEIL H 4.5 SOUD	Y 187	537152
Z101 à Z102	2,000	IC LS COMPT. BCD SYNC. DIL16	SN74LS160A-N	549363
Z103	1,000	IC LS DECODEUR OCTAL DIL16	SN74LS138-N	507423
Z104	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z104	1,000	DAC 12BITS CMOS 0.1% DIL20	AD7545-LN	855316
Z105	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z105	1,000	DAC 12BITS CMOS 0.1% DIL20	AD7545-LN	855316
Z106	1,000	IC LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z107	1,000	IC MOS 3 PROG. TIMER DIL24	8253-5	576557
Z107	1,000	SUPPORT DE IC SOUDE POUR DIL24	ICL 246-S7T.	578223
Z108	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473
Z109	1,000	IC LS 2 MONOSTABLE DIL16	SN74LS221-N	504378
Z110 à Z111	2,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002
Z112 à Z113	2,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473

Etabli:

Jaku.

Date:

23/06/92

Vérifié:

[Signature]

SIGMA 1

PCA CARDIS

852929

Repères topologiques



KONTRON
INSTRUMENTS

03 121 N005

004

FEUILLE 4 sur 5FEUILLES

Edi. D

Repères	Quantité	DESIGNATION	Référence	Article
Z114	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z114	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 1
Z115	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z115	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 1
Z115	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z116	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 1
Z201	1,000	IC LS 3 NAND 3 ENTREES DIL14	SN74LS10-N	549339
Z202	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z202	1,000	PAL (8+8)E - 6S 3E DIL20	PAL 16L8A-2CN	838772 1
Z203	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z207	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z208	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z211	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 1
Z212 à Z213	2,000	COMPAREUR QUAD. TTL DIL14	LM339-N	596477 1
Z214	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z216	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 1
Z303	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z306	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 1
Z316	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z403	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z501	1,000	COMPAREUR QUAD. TTL DIL14	LM339-N	596477 1
Z503	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z508 à Z509	2,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 1
Z510 à Z511	2,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z512	1,000	IC LS 3 NAND 3 ENTREES DIL14	SN74LS10-N	549339
Z513	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
Z516	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 1
Z601	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z603	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z605	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z606	1,000	IC LS 4 NAND 2 ENT.CO. DIL14	SN74LS38-N	507342
Z607	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z608	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 1
Z611	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 1
Z612	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z613	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704
Z616	1,000	REGUL.POS.AJUS.1,5A 15W TO220	LM317-T	598658
Z701	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z703	1,000	COMPAREUR SORTIE TTL DIL 8	LM311-N	574414
Z712	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z716	1,000	REGUL.NEG.AJUS.1,5A 15W TO220	LM337-T	598666

Etabli:
Jaku.

Date:
23/06/92

Vérifié:



SIGMA 1

PCA CARDIS
852929

Repères topologiques



KONTRON
INSTRUMENTS


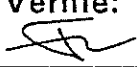
03 121 N005

004


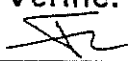
FEUILLE 5 sur 5FEUILLES

Edi D

Repères	Quantité	DESIGNATION	Référence	Article
99999	3,000	ECROU HU M3 INOX	18/10	355747
99999	1,000	ETIQUETTE SERIE/VERSION C.I	SP680057_1	427721 1
99999	2,000	CANON ISOLANT D 3.8 L 3.5	56201-C	516856
99999	1,000	VIS CL M3 X 6 INOX	18/10	545392
99999	4,000	INTERCALAIRE TO 18 H 2	DE 011	716413 1
99999	3,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647 1
99999	2,000	VIS C M3 X 14 INOX	18/10	742511 1
99999	1,000	INTERCALAIRE TO100 A DIL H 4,5	MON-10LF	822051 1
99999	1,000	PCB WOMOT	03 121 B204-C	852902 1
99999	0,090	FIL FEP WRAP-VERT 0.05MM2	KW03-30A2	853739 1
99999	1,000	RADIATEUR POUR 3573 12 C/W	803HS	859516 1
99999	1,000	RADIATEUR POUR T03 14 C/W	AKK127	859621 1
C1	1,000	COND.CERA.R 120 PF 2 % 100 V	680 58 121-P2,5	591645
C2	1,000	A STOCK NUL UTILISER 411604	SEM1E470 D5H11	537489
C3	1,000	COND.CERA.R 470 PF 10 % 100 V	630 08 471-P2,5	517119
C4 à C5	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C6	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C7	1,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C8 à C10	3,000	COND.TANT.G 1 UF P 2,5 35V	TAP-SP	517402
C12 à C13	2,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 1
C14	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2,5	517003
C15	1,000	COND.FILM R 10 NF20% 250 VDC	BR7C P 7,5	517232
C16	1,000	COND.FILM.R 6.8NF20% 400 VDC	BR7 PAS 7,5	706566 1
C17	1,000	COND.FILM R 100 NF20% 250 VDC	BR7C P15,24	517267
C19	1,000	COND.FILM R 22 NF20% 250 VDC	BR7C P 7,5	517240
C20	1,000	COND.FILM R 2.2UF10% 100 VDC	BR7 P22,5	706817 1
C21 à C22	2,000	COND.ELEC.A 100UF 40V	CMF FP	707368 1
C23 à C25	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C26	1,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C27	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C28	1,000	COND.TANT.G 4,7UF P 2,5 35V	TAP-SP	709646 1
C29 à C31	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C32 à C34	3,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C35 à C36	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C37 à C51	15,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C52 à C54	3,000	COND.CERA.R 4,7NF 10 % 100 V	630 08 472-P2,5	517186
C55 à C58	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C59	1,000	COND.TANT.G 1 UF P 2,5 35V	TAP-SP	517402
C60	1,000	COND.FILM R 680 NF10% 50 VDC	MKT1.68 P 5	883476 1
CR1	1,000	DIODE ZEN. 8.2V 5% 0.5W DO35	BZX55 C8V2	817139 1
CR2' à CR3	2,000	DIODE. RED 200V 2A SOD57	BYV27V200	849006 1
CR4	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
F1	1,000	LIMITEUR DE COURANT 400/600 MA	RXE040	883425 1
J24	1,000	EMBASE HE10 VER M 2X25PTS CI C	65B EV 50M6 YCM	850659 1
J27	1,000	EMBASE HE10 VER M 2X13PTS CI C	65B EV 26M6 YCM	575240
L1	1,000	SELF N.B 47UH10% 4R5 110MA	1025-60 L7D2.5	579971
L2 à L3	2,000	SELF N.B 47UH 5% 2R8 193MA	1537-60 L10D 4	595985
L4	1,000	SELF N.B 10UH 1 A	VK 200 2,5 3B	702285 1
Q1 à Q2	2,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
Q3 à Q5	3,000	TRAN.NPN 30V 0,8A 0,4W TO 18	2N2222A	511366
Q6	1,000	TRAN.PNP 60V 0,6A 0,4W TO 18	2N2907A	511390
R1	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378
R2	1,000	RES.COUC 22 KOHMS 5% 1/4W	CR 25	510572
R3	1,000	RESEAU SIL 7X 4,7KOHMS 2% COM	4308R-101-472	843067 1
R4	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319

Etabli: Barat	SIGMA 1 PCA WOMOT 2 868108 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 20/03/92		03 121 N010	003
Vérifié: 		FEUILLE 1 sur 4FEUILLES	Edi. D:

Repères	Quantité	DESIGNATION	Reference	Article
R5	1,000	RES.COUM 4,02KOHMS 1% 1/8W	MRS 25	518727
R6	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037 1
R7 à R8	2,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053 1
R9 à R10	2,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037 1
R11 à R12	2,000	RES.COUM 19,6 KOHMS 1% 1/8W	MRS 25	519049
R13	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R14	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037 1
R15	1,000	POT.CERMET 100 OHMS VERT.25 TR	64W-101	516872
R16	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R17	1,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053 1
R18	1,000	RES.COUM 2,49KOHMS 1% 1/8W	MRS 25	518611
R19	1,000	POT.CERMET 500 OHMS VERT.25 TR	64W-501	516899
R20	1,000	RES.COUM 2,26KOHMS 1% 1/8W	MRS 25	518603
R21	1,000	POT.CERMET 200 OHMS VERT.25 TR	64W-201	516880
R22	1,000	RES.COUM 1,15KOHMS 1% 1/8W	MRS 25	518441
R23 à R24	2,000	RES.COUM 2,49KOHMS 1% 1/8W	MRS 25	518611
R25	1,000	RES.COUM 619 OHMS 1% 1/8W	MRS 25	518328
R26	1,000	RES.COUM 365 OHMS 1% 1/8W	MRS 25	518190
R27	1,000	RES.COUM 121 OHMS 1% 1/8W	MRS 25	517933
R28	1,000	RES.COUM 14,7 KOHMS 1% 1/8W	MRS 25	518980
R29	1,000	RES.COUM 5,90KOHMS 1% 1/8W	MRS 25	518816
R30	1,000	RES.COUM 15,4 KOHMS 1% 1/8W	MRS 25	518999
R31	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R32	1,000	POT.CERMET 20KOHMS VERT.25 TR	64W-203	525715
R33	1,000	RES.COUM 20,5 KOHMS 1% 1/8W	MRS 25	519057
R34 à R35	2,000	RES.COUM 5,62KOHMS 1% 1/8W	MRS 25	518808
R36	1,000	RES.COUM 56,2 KOHMS 1% 1/8W	MRS 25	519286
R37	1,000	RES.COUM 220 OHMS 5% 1/4W	CR 25	510319
R38 à R39	2,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053 1
R40	1,000	RES.COUM 12,7 KOHMS 1% 1/8W	MRS 25	518956
R41	1,000	RES.COUM 2,26KOHMS 1% 1/8W	MRS 25	518603
R42	1,000	RES.COUM 3,3 KOHMS 5% 1/4W	CR 25	510475
R44	1,000	RES.COUM 64,9 KOHMS 1% 1/8W	MRS 25	519316
R45	1,000	RES.COUM 330 KOHMS 5% 1/4W	CR 25	516317
R46	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R48	1,000	RES.COUM 38,3 KOHMS 1% 1/8W	MRS 25	519200
R49 à R51	3,000	RES.COUM 46,4 KOHMS 1% 1/8W	MRS 25	519243
R52	1,000	RES.COUM 1 KOHMS 5% 1/4W	CR 25	510408
R53	1,000	RES.COUM 10 KOHMS 5% 1/4W	CR 25	510513
R54	1,000	RES.COUM 19,6 KOHMS 1% 1/8W	MRS 25	519049
R55 à R56	2,000	RES.COUM 5,90KOHMS 1% 1/8W	MRS 25	518816
R57	1,000	RES.COUM 19,6 KOHMS 1% 1/8W	MRS 25	519049
R58	1,000	RES.COUM 22 KOHMS 5% 1/4W	CR 25	510572
R59	1,000	RES.COUM 4,7 KOHMS 5% 1/4W	CR 25	510491
R60	1,000	RES.COUM 56 KOHMS 5% 1/4W	CR 25	516236
R61	1,000	RES.COUM 10 MOHMS 10% 1/4W	CR 25	526991
R62	1,000	RES.COUM 10 OHMS 5% 1/4W	CR 25	515973
R63 à R64	2,000	RES.COUM 1 KOHMS 5% 1/4W	CR 25	510408
R65	1,000	RES.COUM 10 KOHMS 5% 1/4W	CR 25	510513
R66	1,000	RES.COUM 22,6 KOHMS 1% 1/8W	MRS 25	503649
R67	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R68	1,000	RES.COUM 22 KOHMS 5% 1/4W	CR 25	510572
R69	1,000	RES.COUM 12,1 KOHMS 1% 1/8W	MRS 25	518948
R70	1,000	RES.COUM 12 KOHMS 5% 1/4W	CR 25	510521
R71	1,000	RES.COUM 15 KOHMS 5% 1/4W	CR 25	510548

Etabli: Barat	SIGMA 1 PCA WOMOT 2 868108 Repères topologiques				
Date: 20/03/92					
Vérifié: 		03 121 N010	003	FEUILLE 2 sur 4 FEUILLES	Edi.

Ce document est la propriété de KONTRON et ne peut être reproduit ou communiqué sans autorisation écrite

Repères	Quantité	DESIGNATION	Reference	Article
R72	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491
R73	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R74	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R75 à R76	2,000	RES.COUC 1.5 OHMS 20% 1/2W	PR50	859710 1
R77	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R78	1,000	RES.COUC 2.2 KOHMS 5% 1/4W	CR 25	510432
R79	1,000	RES.COUC 6.8 OHMS 5% 1W	PR01	859729 1
R80	1,000	RES.COUC 22 KOHMS 5% 1/4W	CR 25	510572
R81	1,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053 1
R82	1,000	RES.COUC 2 KOHMS 1% 1/8W	MRS 25	519804
R83	1,000	RES.COUC 33 OHMS 5% 1/4W	CR 25	516031
R84	1,000	RES.COUC 330 OHMS 5% 1/4W	CR 25	510343
R85	1,000	RES.COUC 5.6 KOHMS 5% 1/4W	CR 25	516163
R86	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R87 à R88	2,000	RES.COUC 2 KOHMS 1% 1/8W	MRS 25	519804
R89	1,000	RES.COUC 226 OHMS 1% 1/8W	MRS 25	518085
R90	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R91	1,000	RES.COUC 226 OHMS 1% 1/8W	MRS 25	518085
R92	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R93	1,000	RES.COUC 226 OHMS 1% 1/8W	MRS 25	518085
R94	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R95	1,000	RES.COUC 511 OHMS 1% 1/8W	MRS 25	518263
REL1	1,000	RELAIS ELEC.12DC 1RT	REL12-A04.2-12V	859664 1
ST1	1,000	CAVALIER D 1 P 5.08 DORE	DCA 001	711462 1
ST1	2,000	PLOT C/D TEST D 1 H 6.9 SOUD	DP 022 AU	711829 1
TP0	21,000	PLOT C/D OEIL H 4.5 SOUD	Y 187	537152
Z1	1,000	IC REF TENSION 10V 0.15% DIL 8	REF 01-EZ	864587 1
Z2	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579 1
Z3	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851
Z4	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579 1
Z5	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z5	1,000	IC 4 QUADRANT MULTIPLIER DIL16	MC1494-L	543853
Z6	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851
Z7 à Z8	2,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003
Z9	1,000	IC LS 8 BASCULE D DIL20	SN74LS373-N	575038
Z10	1,000	IC LS 8 INV.BUFFER 3E DIL20	SN74LS240-N	578002
Z11	1,000	IC LS 8 BASCULE D DIL20	SN74LS273-N	573744
Z12	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z12	1,000	DAC 12BITS CMOS 0.1% DIL20	AD7545-LN	855316
Z13	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z13	1,000	DAC 12BITS CMOS 0.1% DIL20	AD7545-LN	855316
Z14	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z14	1,000	DAC 12BITS CMOS 0.1% DIL20	AD7545-LN	855316
Z15	1,000	AMPLI.OPER. 34V 2A 40W TO3-8	3573-AM	857157
Z16	1,000	REGUL.NEG.AJUS.1.5A 15W TO220	LM337-T	598666
Z17	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z17	1,000	ADC 10BITS 1 US .05 % DIL28	ZN433CJ-10	855634
Z18 à Z19	2,000	IC LS 8 BASCULE D DIL20	SN74LS377-N	577197
Z20	1,000	SUPPORT DE IC SOUDE POUR DIL24	ICL 246-S7T	578223
Z20	1,000	REMPLACER PAR 855871	2732A	816817
Z21	1,000	IC MOS 3 PROG. TIMER DIL24	8253-5	576557
Z21	1,000	SUPPORT DE IC SOUDE POUR DIL24	ICL 246-S7T	578223
Z22	1,000	CI LS 8 BASCULE D DIL20	SN74LS374-N	507504
Z23	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z23	1,000	A STOCK NUL UTILISER 860042	2764-30	842230

Etabli:
Barat

Date:
20/03/92

Vérifié:

[Signature]

SIGMA 1

PCA WOMOT 2
868108

Repères topologiques



KONTRON
INSTRUMENTS



03 121 N010

003

FEUILLE 3 sur 4 FEUILLES

Edi. D

Repères	Quantité	DESIGNATION	Reference	Article
Z24	1,000	SUPPORT DE IC SOUDE POUR DIL28	ICL 286-S7T	500542
Z24	1,000	A STOCK NUL UTILISER 860042	2764-30	842230 1
Z25	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 1
Z26	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851
Z27	1,000	IC.COMMUT.ANALOG.2VOIES TO100	DG200 ABA	543829
Z28 à Z29	2,000	IC LS COMPAR. 4BIT DIL16	SN74LS85-N	507377
Z30	1,000	IC LS DECODEUR OCTAL DIL16	SN74LS138-N	507423
Z31	1,000	IC LS 2X4A1 SELEC. MUX.DIL16	SN74LS153-N	549355
Z32	1,000	IC LS COMPTEUR BIN REV.DIL16	SN74LS193-N	576050
Z33	1,000	IC LS 4 BASCULE D DIL16	SN74LS175-N	504351
Z34 à Z36	3,000	IC LS COMPTEUR BIN REV.DIL16	SN74LS193-N	576050
Z37	1,000	COMPAREUR QUAD. TTL DIL14	LM339-N	596477
Z38	1,000	IC LS 2 OU EXC. 2 ENT. DIL14	SN74LS86-N	504343
Z39	1,000	IC LS COMPAR. 4BIT DIL16	SN74LS85-N	507377
Z40	1,000	IC LS COMPT. BIN.SYNC. DIL16	SN74LS163A-N	574473
Z41	1,000	IC LS 2X2A4 DECO.DEMUX.DIL16	SN74LS155-N	549428
Z42	1,000	IC LS 4 NOR 2 ENTREES DIL14	SN74LS02-N	507288
Z43	1,000	IC LS 3 NOR 3 ENTREE DIL14	SN74LS27-N	598755 1
Z44	1,000	IC LS 4 NAND 2 ENTREES DIL14	SN74LS00-N	504300
Z45	1,000	IC LS 4 NOR 2 ENTREES DIL14	SN74LS02-N	507288
Z46	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z47	1,000	IC LS 2 NAND 4 ENT.3E. DIL14	SN74LS13-N	573736

Etabli: Barat	SIGMA 1 PCA WOMOT 2 868108 Repères topologiques		
Date: 20/03/92		03 121 N010	
Vérifié: 		003	Edi. D
FEUILLE 4 sur 4FEUILLES			

Repères	Quantité	DESIGNATION	Reference	Article
99999	26,000	INTERCALAIRE TO 18 H2	DE 011	716413 13
99999	4,000	BARRE BUS DOUBLE 14PT PO.6 D.3	M823 13.6 3	849146 15
99999	1,000	PCB IFDOD	03 120 8201-A	852767 15
C1	1,000	A STOCK NUL UTILISER 411604	SEM1E470 D5H11	537489 10
C2	1,000	COND.ELEC.D 10UF P 2 50V	SEM1H100 D5H11	508152
C3 à C4	2,000	A STOCK NUL UTILISER 411604	SEM1E470 D5H11	537489 10
C5	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C6	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2.5	517097 3
C7 à C9	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C10	1,000	COND.CERA.R 47 PF 2 % 100 V	680 10 479-P2.5	517054 3
C11	1,000	COND.CERA.R 2,2NF 10 % 100 V	630 08 222-P2.5	517151 4
C12 à C15	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C16	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C17 à C18	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C19 à C20	2,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2.5	510955 2
C21 à C23	3,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C24 à C25	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C26	1,000	COND.AJUST. 3.5 A 18PF	C 050V18E	843202 15
C27	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2.5	517003 3
C28	1,000	COND.CERA.R 180 PF 2 % 100 V	680 58 181-P2.5	599883 13
C29	1,000	COND.CERA.R 56 PF 2 % 100 V	680 10 569-P2.5	708151 13
C30	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C31	1,000	COND.CERA.R 560 PF 2 % 100 V	681 70 561-P5	708089 13
C32	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C33	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C35	1,000	COND.POLY.R 2 NF 1% 630 VDC	PMR64 PAS 7.62	578908 12
C36	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C42	1,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 13
C46 à C49	4,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C50	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C51	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C52	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C53	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C54	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C55	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C56	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C57	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C58 à C59	2,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C60 à C66	7,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C68 à C69	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C70	1,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 13
C71	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C72 à C73	2,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 13
C74	1,000	COND.CERA.R 47 PF 2 % 100 V	680 10 479-P2.5	517054 3
C75 à C77	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C78	1,000	COND.POLY.R 1 NF 1% 630 VDC	PMR64 PAS 7.62	573531 10
C79	1,000	COND.POLY.R 2 NF 1% 630 VDC	PMR64 PAS 7.62	578908 12
C80	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C81	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C82	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C83 à C85	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C86	1,000	COND.POLY.R 2 NF 1% 630 VDC	PMR64 PAS 7.62	578908 12
C87	1,000	COND.POLY.R 1 NF 1% 630 VDC	PMR64 PAS 7.62	573531 10
C88 à C91	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C92	1,000	COND.CERA.R 330 PF 2 % 100 V	680 58 331-P2.5	517100 4

Etabli:
Rivall

Date:
22/10/90

Vérifié:

SIGMA 1

PCA IFDOD
852724

Repères topologiques



KONTRON
INSTRUMENTS


03 120 N001

004


FEUILLE 1 sur 7FEUILLES

Edi. Dat


Repères	Quantité	DESIGNATION	Reference	Article
C93	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C94	1,000	COND.CERA.R 47 PF 2 % 100 V	680 10 479-P2.5	517054 3
C95	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
C96 à C103	8,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C105	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C106	1,000	COND.CERA.R 82 PF 2 % 100 V	680 10 829-P2.5	599875 13
C107 à C108	2,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2.5	517097 3
C109	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2.5	517003 3
C110 à C111	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C115	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2.5	517097 3
C116	1,000	COND.CERA.R 82 PF 2 % 100 V	680 10 829-P2.5	599875 13
C117	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2.5	517097 3
C118 à C120	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C121	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C122 à C123	2,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 13
C124 à C126	3,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C127 à C129	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C130	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C131	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C132	1,000	COND.CERA.R 120 PF 2 % 100 V	680 58 121-P2.5	591645 12
C133	1,000	COND.TANT.G 4.7UF P 2.5 35V	TAP-SP	709646 13
C134	1,000	COND.CERA.R 120 PF 2 % 100 V	680 58 121-P2.5	591645 12
C135 à C138	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C139	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005 2
C140 à C141	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C142	1,000	COND.CERA.R 220 PF 2 % 100 V	680 58 221-P2.5	517097 3
C143	1,000	COND.CERA.R 390 PF 10 % 100 V	630 08 391-P2.5	804622 14
C144	1,000	COND.CERA.R 1 NF 10 % 100 V	630 08 102-P2.5	517135 4
C145	1,000	COND.CERA.R 180 PF 2 % 100 V	680 58 181-P2.5	599883 13
C146	1,000	COND.CERA.R 6.8PF 25PF 100 V	681 09 688-P5	708046 13
C147 à C149	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056 3
C150	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218 14
CR1 à CR4	4,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 3
CR5 à CR9	5,000	DIODE VAR. 12V 22A620PF TO92	BB212	842478 15
CR10	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 3
CR12 à CR14	3,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495 10
CR15 à CR24	10,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 3
CR25 à CR26	2,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495 10
CR27	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 3
CR28	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495 10
CR29	1,000	DIODE ZEN. 3.3V 5% 0.5W DO35	BZX55 C3V3	817201 14
CR30	1,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495 10
CR31 à CR36	6,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044 3
CR37 à CR38	2,000	DIODE SCH. 60V 15MA 0.4W DO35	1N6263	549495 10
J31	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259 11
J32	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259 11
J34	0,700	BARRETTE C 2X36PTS CI/W 2.54	76-350-103-72	598461 13
J327	1,000	EMBASE ENCLIQU. M COAXIAL CI C	KMC13	842044 14
L1 à L4	4,000	SELF N.B 10UH 1 A	VK 200 2.5 3B	702285 13
L5	1,000	SELF N.B 5.6UH10% 1R8 195MA	53840 L7D2.5	577618 11
L6	1,000	SELF N.B 10UH10% 2R9 144MA	53846 L7D2.5	577634 11
L7	1,000	SELF N.B 22UH10% 3R3 144MA	1025-52 L7D2.5	578703 11
L8 à L9	2,000	SELF N.B 12UH10% 2R7 160MA	1025-46 L7D2.5	583839 12
L10 à L12	3,000	SELF N.B 100UH10% 8R 84MA	1025-68 L7D2.5	579998 12
Q1	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC'64	577499 11

Etabli: Rivall	SIGMA 1 PCA IFDOD 852724 Repères topologiques		
Date: 22/10/90			
Vérifié:		03 120 N001	004
		FEUILLE 2 sur 7FEUILLES	Edi. Dat.


Repères	Quantité	DESIGNATION	Reference	Article
Q2	1,000	TRAN.DMOS 20V 50MA 0.3W TO 72	BSD215	862371 15
Q3	1,000	TRAN.PNP 30V 0.2A 0.3W CB 76	BC212-B	593273 12
Q4 à Q5	2,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
Q6	1,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366 3
Q7 à Q12	6,000	TRAN.DMOS 20V 50MA 0.3W TO 72	BSD215	862371 15
Q13 à Q14	2,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
Q15	1,000	TRAN.NPN 30V 0.8A 0.4W TO 18	2N2222A	511366 3
Q16 à Q21	6,000	TRAN.DMOS 20V 50MA 0.3W TO 72	BSD215	862371 15
Q22 à Q25	4,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
Q26	1,000	TRAN.DMOS 20V 50MA 0.3W TO 72	BSD215	862371 15
Q27 à Q29	3,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
Q30	1,000	TRAN.DMOS 20V 50MA 0.3W TO 72	BSD215	862371 15
Q31	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
Q32	1,000	TRAN.PNP 30V 0.2A 0.3W CB 76	BC212-B	593273 12
Q33 à Q38	6,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056 14
Q39 à Q41	3,000	TRAN.NPN 15V 0.5A 0.4W TO 18	2N2369	596361 12
Q42 à Q43	2,000	TRAN.PNP 30V 25MA 1.4W CB 76	BF324	575151 11
Q44	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 11
R1	1,000	RES.COUC 4.7 KOHMS 5% 1.4W	CR 25	510491 2
R2	1,000	RES.COUM 133 OHMS 1% 1.8W	MRS 25	517968 4
R3	1,000	RES.COUM 68.1 OHMS 1% 1.8W	MRS 25	517828 4
R4	1,000	RES.COUC 100 OHMS 5% 1.4W	CR 25	510289 1
R5	1,000	RES.COUC 1 KOHMS 5% 1.4W	CR 25	510408 2
R6	1,000	RES.COUC 2.2 KOHMS 5% 1.4W	CR 25	510432 2
R7	1,000	RES.COUM 22.6 KOHMS 1% 1.8W	MRS 25	503649
R8	1,000	RES.COUM 511 OHMS 1% 1.8W	MRS 25	518263 5
R9	1,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R10 à R11	2,000	RES.COUM 511 OHMS 1% 1.8W	MRS 25	518263 5
R12 à R13	2,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R14	1,000	RES.COUM 750 OHMS 1% 1.8W	MRS 25	518360 6
R15	1,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R16	1,000	RES.COUM 215 OHMS 1% 1.8W	MRS 25	518077 4
R17	1,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R18	1,000	RES.COUM 619 OHMS 1% 1.8W	MRS 25	518328 5
R19	1,000	RES.COUM 237 OHMS 1% 1.8W	MRS 25	518093 5
R20	1,000	RES.COUM 1 KOHMS 1% 1.8W	MRS 25	510033
R21	1,000	RES.COUC 100 OHMS 5% 1.4W	CR 25	510289 1
R22	1,000	RES.COUM 1 KOHMS 1% 1.8W	MRS 25	510033
R23	1,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R24	1,000	RES.COUC 220 OHMS 5% 1.4W	CR 25	510319 1
R25	1,000	RESEAU SIL 9X 2.2KOHMS 2% COM	4310R-101-222	508993
R26	1,000	RES.COUC 220 OHMS 5% 1.4W	CR 25	510319 1
R27	1,000	RES.COUC 2.2 KOHMS 5% 1.4W	CR 25	510432 2
R28	1,000	RESEAU SIL 9X 4.7KOHMS 2% COM	4310R-101-472	583057 12
R29	1,000	RES.COUC 1 KOHMS 5% 1.4W	CR 25	510408 2
R30	1,000	RES.COUM 14.7 KOHMS 1% 1.8W	MRS 25	518980 8
R31	1,000	RES.COUM 1.96KOHMS 1% 1.8W	MRS 25	518565 7
R32	1,000	RES.COUC 2.2 KOHMS 5% 1.4W	CR 25	510432 2
R33	1,000	RES.COUM 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R34	1,000	RES.COUC 47 OHMS 5% 1.4W	CR 25	510254 1
R35	1,000	RES.COUM 2.61KOHMS 1% 1.8W	MRS 25	518638 7
R36	1,000	RES.COUM 9.09KOHMS 1% 1.8W	MRS 25	510092 1
R37	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456 10
R38	1,000	RES.COUC 47 KOHMS 5% 1.4W	CR 25	510602 2
R39	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456 10

Etabli: Rivall	SIGMA 1 PCA IFDOD 852724 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 22/10/90		03 120 N001	004
Vérifié:		FEUILLE 3 sur 7FEUILLES	Edi. Dat


Repères	Quantité	DESIGNATION	Référence	Article
R40	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602 2
R41	1,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456 10
R42	1,000	RES.COUC.M 4.64KOHMS 1% 1.8W	MRS 25	518751 8
R43	1,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610 2
R44 à R45	2,000	RES. 0 OHMS	PR 25 L7D2.5	805017 14
R46	1,000	RES.COUC.C 10 KOHMS 5% 1/4W	CR 25	510513 2
R47	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R48 à R49	2,000	RES. 0 OHMS	PR 25 L7D2.5	805017 14
R50	1,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610 2
R51	1,000	RES.COUC.C 10 KOHMS 5% 1/4W	CR 25	510513 2
R52	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R53	1,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610 2
R54 à R55	2,000	RES. 0 OHMS	PR 25 L7D2.5	805017 14
R56	1,000	RES.COUC.M 11.5 KOHMS 1% 1.8W	MRS 25	518921 8
R57 à R58	2,000	RES.COUC.M 30.1 KOHMS 1% 1.8W	MRS 25	519154 9
R59	1,000	RES.COUC.C 1.5 KOHMS 5% 1/4W	CR 25	510416 2
R60 à R62	3,000	RES.COUC.M 1.47KOHMS 1% 1.8W	MRS 25	518506 6
R63	1,000	RES.COUC.M 4.42KOHMS 1% 1.8W	MRS 25	518743 7
R64	1,000	RES.COUC.M 787 OHMS 1% 1.8W	MRS 25	518379 6
R65	1,000	RES.COUC.M 1 KOHMS 1% 1.8W	MRS 25	510033
R66	1,000	RES.COUC.M 178 KOHMS 1% 1.8W	MRS 25	503657
R67	1,000	RES.COUC.M 1.21KOHMS 1% 1.8W	MRS 25	518468 6
R68	1,000	RES.COUC.M 1 KOHMS 1% 1.8W	MRS 25	510033
R69	1,000	RES.COUC.M 59 KOHMS 1% 1.8W	MRS 25	519294 9
R70	1,000	RES.COUC.M 4.02KOHMS 1% 1.8W	MRS 25	518727 7
R71	1,000	RES.COUC.M 5.11KOHMS 1% 1.8W	MRS 25	518786 8
R73	1,000	RES.COUC.M 7.5 KOHMS 1% 1.8W	MRS 25	510084 1
R74 à R75	2,000	RES.COUC.M 4.87KOHMS 1% 1.8W	MRS 25	518778 8
R76	1,000	RES.COUC.M 44.2 KOHMS 1% 1.8W	MRS 25	519235 9
R77	1,000	RES.COUC.M 5.62KOHMS 1% 1.8W	MRS 25	518808 8
R78	1,000	RES.COUC.M 100 KOHMS 1% 1.8W	MRS 25	510149 1
R79	1,000	RES.COUC.M 7.15KOHMS 1% 1.8W	MRS 25	503606
R80	1,000	RES.COUC.C 47 OHMS 5% 1/4W	CR 25	510254 1
R81	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R82	1,000	RES.COUC.M 1.4 KOHMS 1% 1.8W	MRS 25	518492 6
R83	1,000	RES.COUC.M 619 OHMS 1% 1.8W	MRS 25	518328 5
R84	1,000	RES.COUC.M 1.54KOHMS 1% 1.8W	MRS 25	518514 6
R85	1,000	RES.COUC.M 1.62KOHMS 1% 1.8W	MRS 25	518522 6
R86	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R87	1,000	RES.COUC.C 10 KOHMS 5% 1/4W	CR 25	510513 2
R88	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R89	1,000	RES.COUC.M 2.61KOHMS 1% 1.8W	MRS 25	518638 7
R90	1,000	RES.COUC.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R91	1,000	RES.COUC.M 100 KOHMS 1% 1.8W	MRS 25	510149 1
R92	1,000	RES.COUC.M 1.87KOHMS 1% 1.8W	MRS 25	518557 7
R93	1,000	RES.COUC.M 1 KOHMS 1% 1.8W	MRS 25	510033
R94	1,000	RES.COUC.M 649 OHMS 1% 1.8W	MRS 25	518336 5
R95	1,000	RES.COUC.C 47 OHMS 5% 1/4W	CR 25	510254 1
R96	1,000	RES.COUC.C 4.7 KOHMS 5% 1/4W	CR 25	510491 2
R97	1,000	RES.COUC.C 5.6 KOHMS 5% 1/4W	CR 25	516163 1
R98	1,000	RES.COUC.C 2.2 KOHMS 5% 1/4W	CR 25	510432 2
R99	1,000	RES.COUC.C 4.7 KOHMS 5% 1/4W	CR 25	510491 2
R100	1,000	RES.COUC.M 1.87KOHMS 1% 1.8W	MRS 25	518557 7
R101	1,000	RES.COUC.M 715 OHMS 1% 1.8W	MRS 25	518352 5
R102	1,000	RES.COUC.M 19.6 KOHMS 1% 1.8W	MRS 25	519049 5

Etabli: Rivall	SIGMA 1 PCA IFDOD 852724 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 22/10/90		03 120 N001	004
Vérifié:		FEUILLE 4 sur 7FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Reference	Article
R103	1,000	RES.CO.U.M 6.81KOHMS 1% 1.8W	MRS 25	503592
R104	1,000	RES.CO.U.M 19.6 KOHMS 1% 1.8W	MRS 25	519049 8
R105	1,000	RES.CO.U.M 1.02KOHMS 1% 1.8W	MRS 25	518727 7
R106	1,000	RES.CO.U.M 78.7 KOHMS 1% 1.8W	MRS 25	519359 9
R107	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R108	1,000	RES.CO.U.M 7.15KOHMS 1% 1.8W	MRS 25	503606
R109	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R110	1,000	RES.CO.U.M 30.1 KOHMS 1% 1.8W	MRS 25	519154 9
R111	1,000	RES.CO.U.M 10 KOHMS 1% 1.8W	MRS 25	510106 1
R112	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R113	1,000	RES.CO.U.M 20.5 KOHMS 1% 1.8W	MRS 25	519057 8
R114 à R115	2,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R116	1,000	RES.CO.U.M 1.96KOHMS 1% 1.8W	MRS 25	518565 7
R117	1,000	RES.CO.U.M 20.5 KOHMS 1% 1.8W	MRS 25	519057 8
R118	1,000	RES.CO.U.M 487 OHMS 1% 1.8W	MRS 25	518255 5
R119	1,000	RES.CO.U.M 23.7 KOHMS 1% 1.8W	MRS 25	519081 9
R120	1,000	RES.CO.U.M 2.05KOHMS 1% 1.8W	MRS 25	518573 7
R121	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R122	1,000	RES.CO.U.M 82.5 KOHMS 1% 1.8W	MRS 25	510130 1
R123	1,000	RES.CO.U.M 4.87KOHMS 1% 1.8W	MRS 25	518778 8
R124	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R125	1,000	RES.CO.U.M 162 KOHMS 1% 1.8W	MRS 25	519480 9
R126	1,000	RES.CO.U.M 10 KOHMS 1% 1.8W	MRS 25	510106 1
R127	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R128	1,000	RES.CO.U.M 40.2 KOHMS 1% 1.8W	MRS 25	519219 9
R129	1,000	RES.CO.U.M 2.49KOHMS 1% 1.8W	MRS 25	518611 7
R130	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R131	1,000	RES.CO.U.M 249 OHMS 1% 1.8W	MRS 25	518107 5
R132	1,000	RES.CO.U.M 1.47KOHMS 1% 1.8W	MRS 25	518506 6
R133	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R134	1,000	RES.CO.U.M 2.26KOHMS 1% 1.8W	MRS 25	518603 7
R135	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R136	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R137	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R138	1,000	RES.CO.U.M 10 KOHMS 1% 1.8W	MRS 25	510106 1
R139	1,000	RES.CO.U.C 15 KOHMS 5% 1.4W	CR 25	510416 2
R140	1,000	RES.CO.U.C 100 OHMS 5% 1.4W	CR 25	510289 1
R141	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 2
R142	1,000	POT.CERMET 5KOHMS VERT.25 TR	64W-502	525383 9
R143	1,000	RES.CO.U.C 270 OHMS 5% 1.4W	CR 25	510327 1
R144	1,000	RES.CO.U.C 47 OHMS 5% 1.4W	CR 25	510254 1
R145	1,000	RES.CO.U.M 1.27KOHMS 1% 1.8W	MRS 25	518476 6
R146	1,000	RES.CO.U.M 51.1 OHMS 1% 1.8W	MRS 25	517747 4
R147	1,000	RES.CO.U.M 196 OHMS 1% 1.8W	MRS 25	518050 4
R148	1,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513 2
R149	1,000	POT.CERMET 20KOHMS VERT.25 TR	64W-203	525715 10
R150	1,000	RES.CO.U.M 511 OHMS 1% 1.8W	MRS 25	518263 5
R151	1,000	RES.CO.U.M 715 OHMS 1% 1.8W	MRS 25	518352 5
R152	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R153 à R155	3,000	RES.CO.U.M 7.5 KOHMS 1% 1.8W	MRS 25	510084 1
R156	1,000	RES.CO.U.M 464 OHMS 1% 1.8W	MRS 25	518247 5
R157	1,000	RES.CO.U.C 47 OHMS 5% 1.4W	CR 25	510254 1
R158	1,000	RES.CO.U.M 44.2 OHMS 1% 1.8W	MRS 25	798649 14
R159	1,000	RES.CO.U.M 422 OHMS 1% 1.8W	MRS 25	518220 5
R160 à R161	2,000	RES.CO.U.C 47 OHMS 5% 1.4W	CR 25	510254 1

Etabli: Rivall	SIGMA 1 PCA IFDOD 852724 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 22/10/90		03 120 N001	004
Vérifié:		FEUILLE 5 sur 7FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Référence	Article
R162	1,000	RES.COUM 1,47KOHMS 1% 18W	MRS 25	518506 6
R163	1,000	RES.COUM 31.6 KOHMS 1% 18W	MRS 25	519162 9
R164	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R165	1,000	RES.COUM 7.5 KOHMS 1% 18W	MRS 25	510084 1
R166	1,000	RES.COUM 31.6 KOHMS 1% 18W	MRS 25	519162 9
R167	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R168	1,000	RES.COUM 3.48KOHMS 1% 18W	MRS 25	518697 7
R169	1,000	RES.COUM 1.15KOHMS 1% 18W	MRS 25	518441 6
R170	1,000	RES.COUM 7.15KOHMS 1% 18W	MRS 25	503606
R171	1,000	RES.COUM 422 OHMS 1% 18W	MRS 25	518220 5
R172	1,000	RES.COUM 2.49KOHMS 1% 18W	MRS 25	518611 7
R173	1,000	RES.COUM 7.15KOHMS 1% 18W	MRS 25	503606
R174	1,000	RES.COUM 1.96KOHMS 1% 18W	MRS 25	518565 7
R175	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491 2
R176	1,000	RES.COUC 68 KOHMS 5% 1/4W	CR 25	516244 3
R177	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R178 à R181	4,000	RES.COUM 4.87KOHMS 1% 18W	MRS 25	518778 8
R182	1,000	RES.COUM 3.65KOHMS 1% 18W	MRS 25	518700 7
R183	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R184	1,000	RES.COUM 4.02KOHMS 1% 18W	MRS 25	518727 7
R185	1,000	RES.COUM 4.87KOHMS 1% 18W	MRS 25	518778 8
R186	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289 1
R187	1,000	RES.COUM 3.48KOHMS 1% 18W	MRS 25	518697 7
R188	1,000	RES.COUM 13.3 KOHMS 1% 18W	MRS 25	518964 8
R189	1,000	RES.COUM 2.37KOHMS 1% 18W	MRS 25	510041 1
R190	1,000	RES.COUM 2.05KOHMS 1% 18W	MRS 25	518573 7
R191	1,000	RES.COUM 237 KOHMS 1% 18W	MRS 25	519561 9
R193	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R196	1,000	RES.COUM 590 OHMS 1% 18W	MRS 25	518301 5
R198	1,000	RES.COUC 1.5 KOHMS 5% 1/4W	CR 25	510416 2
R199 à R200	2,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254 1
R201	1,000	RES.COUM 3.25KOHMS 1% 18W	MRS 25	518875 8
R202 à R203	2,000	RES.COUM 1.05KOHMS 1% 18W	MRS 25	518425 6
R204	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R205	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R206 à R207	2,000	RES.COUM 4.87KOHMS 1% 18W	MRS 25	518778 8
R208	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254 1
R209	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R210	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254 1
R211	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R212 à R213	2,000	RES.COUM 196 OHMS 1% 18W	MRS 25	518050 4
R214	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R215	1,000	RES.COUM 196 OHMS 1% 18W	MRS 25	518050 4
R216	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R217	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R218	1,000	RES.COUM 196 OHMS 1% 18W	MRS 25	518050 4
R219	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R220	1,000	RES.COUM 10 KOHMS 1% 18W	MRS 25	510106 1
R221	1,000	RES.COUM 196 OHMS 1% 18W	MRS 25	518050 4
R222	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378 2
R223	1,000	RES.COUM 487 OHMS 1% 18W	MRS 25	518255 5
R224	1,000	RES.COUM 1 KOHMS 1% 18W	MRS 25	510033
R225	1,000	RES.COUM 147 OHMS 1% 18W	MRS 25	517984 4
R226	1,000	RES.COUM 100 KOHMS 1% 18W	MRS 25	510149 1
R227	1,000	RES.COUM 1.42KOHMS 1% 18W	MRS 25	518743 7

Etabli: Rivall	SIGMA 1 PCA IFDOD 852724 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 22/10/90			
Vérifié:		03 120 N001	004
		FEUILLE 6 sur 7FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Référence	Article
R228	1,000	RES.COUC.M 1.47KOHMS 1% 18W	MRS 25	518506 67
R229	1,000	RES.COUC.C 1 MOHMS 5% 1.4W	CR 25	516384 36
R230	1,000	RES.COUC.C 220 KOHMS 5% 1.4W	CR 25	516295 35
ST1	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 126
ST1	0,084	BARRETTE D 1X36PTS CIW 2.54	75160-102-36	598348 129
ST2	1,000	CAVALIER ROUGE P 2.54 ISOLE	313-1365-000402	596086 126
ST2	0,084	BARRETTE D 1X36PTS CIW 2.54	75160-102-36	598348 129
TP0 à TP3	10,000	PLOT CI D OEIL H 4.5 SOUD	Y 187	537152 104
TP4	0,112	BARRETTE D 1X36PTS CIW 2.54	75160-102-36	598348 129
TP7 à TP8	2,000	PLOT CI D OEIL H 4.5 SOUD	Y 187	537152 104
TP9	0,112	BARRETTE D 1X36PTS CIW 2.54	75160-102-36	598348 129
TP12 à TP21	10,000	PLOT CI D OEIL H 4.5 SOUD	Y 187	537152 104
Z101	1,000	IC LS 2 OU EXC. 2 ENT. DIL14	SN74LS86-N	504343 6
Z102 à Z103	2,000	IC LS 8 BUFFER 3E DIL20	SN74LS244-N	575003 109
Z104	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z105	1,000	IC LS 8 BUFFER REV.3E. DIL20	SN74LS245-N	796654 140
Z106	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169 1
Z106	1,000	PAL (8+8)E. 6S 3E DIL20	PAL 16L8A-2CN	838772 148
Z107	1,000	IC LS 8 BASCULE D DIL20	SN74LS373-N	575038 110
Z108	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z109	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z109	1,000	DAC 08BITS 135NS 0.1% SPEC.	DAC08-HP	549207 106
Z110	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 151
Z111 à Z112	2,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z111 à Z112	2,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 112
Z201	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z202	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z202	1,000	DAC 08BITS 135NS 0.1% SPEC.	DAC08-HP	549207 106
Z203	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z204	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z204	1,000	DAC 08BITS 135NS 0.1% SPEC.	DAC08-HP	549207 106
Z205	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z206	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z206	1,000	DAC 08BITS 135NS 0.1% SPEC.	DAC08-HP	549207 106
Z207	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002 117
Z208	1,000	IC CMOS 8 BASCULE D 3E DIL20	74C374-N	838349 147
Z209	1,000	COMPARATEUR QUAD. TTL DIL14	LM339-N	596477 128
Z210	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 151
Z211 à Z212	2,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 118
Z301	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 118
Z302	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z302	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 112
Z303	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 151
Z304	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 130
Z305	1,000	SUPPORT DE IC SOUDE POUR DIL14	ICL 143-S6T	532991 103
Z305	1,000	IC 2XDIFFE.15V 50MA 0.3W DIL14	CA3054	855618 159
Z401 à Z403	3,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851 118
Z404	1,000	AMPLI.OPER.DOUBL.H.PERFO.DIL 8	MC1458C-P1	517453 41
Z405	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983 102
Z405	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178 112
Z406	1,000	AMPLI.OPER.RAPIDE DIL 8	HA7-2525-5	850772 151
Z407 à Z408	2,000	SUPPORT DE IC SOUDE POUR DIL14	ICL 143-S6T	532991 103
Z407 à Z408	2,000	IC 2XDIFFE.15V 50MA 0.3W DIL14	CA3054	855618 159

Etabli:
Rivall

Date:
22/10/90

Vérifié:

SIGMA 1

PCA IFDOD
852724

Repères topologiques



KONTRON
INSTRUMENTS

03 120 N001

004

FEUILLE 7 sur 7FEUILLES

Edi. Date

Repères	Quantité	DESIGNATION	Reference	Article
1	1,000	PCB MEFRO	03 120 B202-B	852783
99999	4,000	VIS C M2,5X 6 INOX	18/10	354260
99999	4,000	RONDELLE A DENT DE 2,5 INOX	18/10	355232
99999	2,000	ECROU HU M3 INOX	18/10	355747
99999	1,000	ETIQUETTE SERIE/VERSION C.I	SP680057_1	427721
99999	2,000	VIS CL M3 X 6 INOX	18/10	545392
99999	3,000	INTERCALAIRE TO 18 H2	DE 011	716413
99999	2,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
99999	13,000	PLOT CID BROCHE D1 H 7,5 SESO	9009-0-10	842079
C1	1,000	COND.CERA.R 120 PF 2 % 100 V	680 58 121-P2,5	591645
C2	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C3	1,000	COND.TANT.G 4,7UF P 2,5 35V	TAP-SP	709646
C4 à C5	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C6	1,000	COND.TANT.G 4,7UF P 2,5 35V	TAP-SP	709646
C7 à C8	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C9	1,000	COND.CERA.R 1 NF 10 % 100 V	630 08 102-P2,5	517135
C10	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C11	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C12	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C13	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C14 à C15	2,000	COND.CERA.R 18 PF 2 % 100 V	680 10 189-P2,5	791806
C16 à C18	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C20 à C23	4,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C26 à C28	3,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C30	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C31	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C33 à C34	2,000	COND.CERA.R 1,5NF 10 % 100 V	630 08 152-P2,5	517143
C35	1,000	COND.FILM R 2,2UF10% 100 VDC	BR7 P22,5	706817
C36	1,000	COND.ELEC.D 22UF P 2,5 35V	SEM1V220 D5H11	500283
C37	1,000	COND.FILM R 1,5UF20% 100 VDC	BR7 P22,5	859524
C38	1,000	A STOCK NUL UTILISER 411604	SEM1E470 D5H11	537489
C39	1,000	COND.FILM R 47 NF20% 250 VDC	BR7L P10	517259
C40	1,000	COND.ELEC.D 22UF P 2,5 35V	SEM1V220 D5H11	500283
C41	1,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C46	1,000	COND.ELEC.D 22UF P 2,5 35V	SEM1V220 D5H11	500283
C47	1,000	COND.TANT.G 10 UF P 2,5 35V	TAP-SP	517429
C48	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C50	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C51 à C52	2,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C56	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
CR1	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR2	1,000	DIODE VAR. 12V 22A620PF TO92	BB212	842478
CR3 à CR4	2,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR5 à CR6	2,000	DIODE ZEN. 6,2V REF 0,4W DO35	1N827	512036
CR17 à CR18	2,000	DIODE COM. 50V 0,2A 4NS DO35	ITT600	852058
CR19 à CR22	4,000	DIODE. RED 200V 2A SOD57	BYV27V200	849006
CR25 à CR26	2,000	DIODE. RED 200V 2A SOD57	BYV27V200	849006
CR27 à CR30	4,000	DIODE COM. 50V 0,2A 4NS DO35	ITT600	852058
CR31	1,000	DIODE ZEN. 62V 5% 1,3W DO41	BZX85 C62	859532
CR32	1,000	DIODE RED. 500V 1A DO41	1N4005	527726
CR41 à CR42	2,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
J11	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259
J12	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259
J120	1,000	EMBASE P2,5 VER F 1X06PTS CI C	MKS2856-1-0-606	845191
L1 à L2	2,000	SELF N.B 1UH10% 0R9 390MA	53822 L7D2,5	837199

Etabli:
Barat

Date:
20/03/92

Vérifié:



SIGMA 1

PCA MEFRO
852775

Repères topologiques



KONTRON
INSTRUMENTS

03 120 N002

006

FEUILLE 1 sur 3FEUILLES

Edi. C

Repères	Quantité	DESIGNATION	Reference	Article
L4	1,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2.5	579998
L6	1,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2.5	579998
L7 à L8	2,000	SELF N.B 47UH10% 4R5 110MA	1025-60 L7D2.5	579971
L9 à L10	2,000	SELF N.B 10UH10% 0R6 335MA	53646 L10D 5	595977
Q1 à Q2	2,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q7 à Q8	2,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056
Q10 à Q11	2,000	TRAN.NMOS 100V 8 A 40W TO220	IRF520	848956
Q14	1,000	TRAN.PNP 60V 0.6A 0.4W TO 18	2N2907A	511390
R1	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378
R2	1,000	RES.COUC 4,7 KOHMS 5% 1/4W	CR 25	510491
R3	1,000	RES.COUC 2,2 KOHMS 5% 1/4W	CR 25	510432
R4	1,000	RES.COUC 22 KOHMS 5% 1/4W	CR 25	510572
R6	1,000	RES.COUC 4,7 KOHMS 5% 1/4W	CR 25	510491
R7 à R8	2,000	RES.COUC 3,32KOHMS 1% 1/8W	MRS 25	518689
R9	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R10	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602
R11	1,000	RES.COUC 1 KOHMS 1% 1/8W	MRS 25	510033
R12	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R13	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R14	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R15 à R16	2,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R17	1,000	RES.COUC 681 OHMS 1% 1/8W	MRS 25	518344
R19	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R21	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R22 à R23	2,000	RES.COUC 487 OHMS 1% 1/8W	MRS 25	518255
R24	1,000	RES.COUC 2 KOHMS 1% 1/8W	MRS 25	519804
R25	1,000	RES.COUC 1,27KOHMS 1% 1/8W	MRS 25	518476
R26	1,000	RES.COUC 562 OHMS 1% 1/8W	MRS 25	518298
R34	1,000	RES.COUC 200 OHMS 1% 1/8W	MRS 25	507873
R35	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R36	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R37	1,000	RES.COUC 22 KOHMS 5% 1/4W	CR 25	510572
R38	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R39	1,000	RES.COUC 100 KOHMS 5% 1/4W	CR 25	510610
R40	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R41	1,000	RES.COUC 100 OHMS 5% 1/2W	CR 37	503576
R44	1,000	RES.COUC 2,2 OHMS 5% 1/4W	CR 25	578622
R45 à R46	2,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R47	1,000	RES.COUC 2,2 OHMS 5% 1/4W	CR 25	578622
R48 à R49	2,000	RES.COUC 4,7 OHMS 5% 1/2W	PR50	848913
R50	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R51	1,000	RES.COUC 1 OHMS 5% 0,4W	SFR25 L7D2,5	578614
R52	1,000	RES.COUC 4,7 OHMS 5% 1/4W	CR 25	591297
R53	1,000	RES.COUC 1 OHMS 5% 0,4W	SFR25 L7D2,5	578614
R60	1,000	RES.COUC 2,7 KOHMS 5% 1/4W	CR 25	510459
R61	1,000	RES.COUC 10 OHMS 5% 1W	CR 52	510777
R62	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R65 à R66	2,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R67	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
REL1	1,000	RELAIS REED 5DC 2RT 3VA DIL	B2W4.3-5V60L10	859672
REL2	1,000	RELAIS REED 5DC 2RT 3VA DIL	B2W4.3-5V60L10	859672
ST1	1,000	CAVALIER D 1 P 5.08 DORE	DCA 001	711462
ST1	3,000	PLOT C I D TEST D 1 H 6,9 SOUD	DP 022 AU	711829
T2	1,000	TRANSFO. RF Z1:9	MCL T9-1	849081
T3	1,000	TRANSFO. HF SEND SP600765-3	50 002 N016	843792

Etabli:
Barat

Date:
20/03/92

Vérifié:



SIGMA 1

PCA MEFRO

852775

Repères topologiques

 **KONTRON**
INSTRUMENTS

03 120 N002

006

FEUILLE 2 sur 3 FEUILLES

Edi.

Da

Repères	Quantité	DESIGNATION	Référence	Article
T4	1,000	TRANSFO.HF SEND SP600765-3	50 002 N016	843792
T5	4,000	TORRE FERRITE 9 X6 X3	3H2-AL650-15%	847887
T5	2,000	VIS TCB CRU.D2.2 L= 6.5ZN.BL	TYPE 1 DIN 7981	850624
T5	0,100	FIL ISOLE SOUP.VIOLET 0.22MM2	KY 30-04	850896
T5	0,400	FIL ISOLE SOUP.MARRON 0.22MM2	KY 30-04	850934
T5	1,000	BLOC TRANSFO.SIGMA 1 USINE	03 124 A502UV	860751
T5	0,100	FIL ISOLE SOUP.VERT 0.22MM2	KY 30-04	861898
T7	1,000	TRANSFO. RF Z1/9	MCL T9-1	849081
TP0	15,000	PLOT C/D OEIL H 4.5 SOUD	Y 187	537152
Z1	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002
Z2	1,000	IC STTL 4 NAND 2 ENT.TRI DIL14	SN74S132-N	598771
Z3	1,000	IC LS 2 NAND 4 ENTREE DIL14	SN74LS20-N	575992
Z4	1,000	IC FTTL 4 BASCULE D DIL16	74F175-PC	843326
Z5	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z5	1,000	IC MOS INTERF.PERIF. DIL40	8255A-5	798444
Z7	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z7	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z8	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z8	1,000	IC MUX ANALOGIQUE 8 VOIE DIL16	4051BC-N	581615
Z9	1,000	COMPARATEUR QUAD. TTL DIL14	LM339-N	596477
Z10	1,000	IC FTTL 4 AND 2 ENTREES DIL14	74F08-PC	866253
Z11	1,000	IC STTL 4NOR 2 ENTREES DIL14	SN74S02-N	855405
Z12	1,000	COMPARATEUR QUAD. TTL DIL14	LM339-N	596477
Z13	1,000	IC STTL 4NOR 2 ENTREES DIL14	SN74S02-N	855405
Z14 à Z15	2,000	IC FTTL 8REG.A DECAL. DIL20	74F299-PC	855391
Z16	1,000	IC LS 8 INV.BUFFER 3E. DIL20	SN74LS240-N	578002
Z17	1,000	IC FTTL 8REG.A DECAL. DIL20	74F299-PC	855391

Etabli:
Barat

Date:
20/03/92

Vérifié:

[Signature]

SIGMA 1

PCA MEFRO
852775

Repères topologiques



KONTRON
INSTRUMENTS


03 120 N002

006

FEUILLE 3 sur 3FEUILLES

Edi. C

Repères	Quantité	DESIGNATION	Reference	Article
150	1,000	PCB SGM II	22 120 B232-B	833703
151	13,000	PLOT CID DOUIL 0.8 H 6 SOUD	3120385000240	597082
152	4,000	ECROU A SERTIR M2.5E2.5 LAITON	742	842052
153	4,000	PERLE 3.7X1.2X3.5 4B1	4322 020 34420	876232
99999	1,000	RONDELLE 6.2X10 X1 BAKELI	110	537128
99999	1,000	ETIQUETTE REPERE SGM2	22	845612
C1	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C2	1,000	COND.CERA.R 4.7PF.25PF 100 V	680 09 478-P2.5	724211
C3	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C4 à C7	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C12	1,000	COND.CERA.R 270 PF 2% 100 V	680 58 271-P2.5	575569
C13	1,000	COND.CERA.R 27 PF 2% 100 V	680 10 279-P2.5	708135
C14	1,000	COND.CERA.R 330 PF 2% 100 V	680 58 331-P2.5	517100
C15	1,000	COND.CERA.R 120 PF 2% 100 V	680 58 121-P2.5	591645
C16	1,000	COND.CERA.R 100 PF 2% 100 V	680 10 101-P2.5	510955
C17	1,000	COND.CERA.R 56 PF 2% 100 V	680 10 569-P2.5	708151
C18	1,000	COND.CERA.R 120 PF 2% 100 V	680 58 121-P2.5	591645
C19	1,000	COND.CERA.R 15 PF 2% 100 V	680 10 159-P2.5	517011
C20	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C21 à C22	2,000	COND.CERA.R 120 PF 2% 100 V	680 58 121-P2.5	591645
C23 à C24	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C25	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C26	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C27 à C28	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C29	1,000	COND.CERA.R 56 PF 2% 100 V	680 10 689-P2.5	517062
C30 à C31	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C32	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C33 à C34	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C35	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C36	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C37 à C38	2,000	COND.CERA.R 120 PF 2% 100 V	680 58 121-P2.5	591645
C39 à C40	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C41	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C42	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C43 à C44	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C45	1,000	COND.CERA.R 68 PF 2% 100 V	680 10 689-P2.5	517062
C46 à C54	9,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C55 à C56	2,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C57	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C58	1,000	COND.CERA.R 100 PF 2% 100 V	680 10 101-P2.5	510955
C59 à C64	6,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
CR1 à CR4	4,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR5	1,000	DIODE ZEN. 5.1V 5% 0.5W DO35	BZX55 C5V1	817252
CR6 à CR7	2,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR8	1,000	DIODE ZEN. 5.1V 5% 0.5W DO35	BZX55 C5V1	817252
CR9	1,000	DIODE ZEN. 10V 5% 0.5W DO35	BZX55 C10	817155
CR10	1,000	DIODE ZEN. 5.1V 5% 0.5W DO35	BZX55 C5V1	817252
L3	1,000	SELF N.B 10UH10% 2R9 144MA	53846 L7D2.5	577634
L4	1,000	SELF N.B 3.3UH10% 0R8 285MA	53834 L7D2.5	577596
L5	1,000	SELF N.B 4.7UH10% 1R2 239MA	53838 L7D2.5	598003
L6	1,000	SELF N.B 1.5UH10% 0R2 560MA	53826 L7D2.5	583448
L7 à L10	4,000	SELF N.B 100UH10% 8R 84MA	1025-68 L7D2.5	579998
Q1 à Q2	2,000	TRAN.NPN 30V 30MA 0.3W CB 76	BF254	598577
Q3	1,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499
Q4	1,000	TRAN.PNP 20V 0.2A 0.3W CB 76	BC212-B	593273

Etabli: Birmmi	PRO. COM. MEDICAL PCA SGM II 833681 Repères topologiques		
Date: 18/07/90		22 120 N032	005
Vérifié:		FEUILLE 1 sur 3FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Reference	Article
Q6 à Q7	2,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056 6
Q9 à Q10	2,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056 6
Q11 à Q12	2,000	TRAN.NFET 27V 50MA 0.4W TO 72	3N211	581631 4
Q13 à Q14	2,000	TRAN.NPN 30V 30MA 0.3W CB 76	BF254	598577 5
Q15 à Q16	2,000	TRAN.NFET 27V 50MA 0.4W TO 72	3N211	581631 4
Q17 à Q18	2,000	TRAN.NPN 30V 30MA 0.3W CB 76	BF254	598577 5
Q19 à Q20	2,000	TRAN.NPN 30V 0.2A 0.3W CB 76	BC184	577499 4
R1	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R2	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 2
R3	1,000	RES.CO.U.M 2.61KOHMS 1% 1.8W	MRS 25	518638 3
R4	1,000	RES.CO.U.M 3.32KOHMS 1% 1.8W	MRS 25	518689 3
R5	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 2
R6	1,000	RES.CO.U.C 22 OHMS 5% 1.4W	CR 25	516015 2
R7	1,000	RES.CO.U.M 1.21KOHMS 1% 1.8W	MRS 25	518468 3
R8	1,000	RES.CO.U.M 1 KOHMS 1% 1.8W	MRS 25	510033
R9	1,000	RES.CO.U.M 909 OHMS 1% 1.8W	MRS 25	518409 3
R10 à R11	2,000	RES.CO.U.C 22 OHMS 5% 1.4W	CR 25	516015 2
R12	1,000	RES.CO.U.C 75 OHMS 5% 1.4W	CR 25	516082 2
R13	1,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513 1
R14	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 2
R19	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 1
R20 à R21	2,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513 1
R22 à R23	2,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 1
R24 à R25	2,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513 1
R26	1,000	RES.CO.U.C 100 KOHMS 5% 1.4W	CR 25	510610 1
R27	1,000	RES.CO.U.M 402 OHMS 1% 1.8W	MRS 25	518212 1
R28 à R29	2,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 1
R30 à R31	2,000	RES.CO.U.M 150 OHMS 1% 1.8W	MRS 25	790036 6
R32	1,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513 1
R33	1,000	RES.CO.U.C 4.7 KOHMS 5% 1.4W	CR 25	510491 1
R34	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 1
R35	1,000	RES.CO.U.M 499 OHMS 1% 1.8W	MRS 25	506559
R36	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031 1
R37	1,000	RES.CO.U.M 169 OHMS 1% 1.8W	MRS 25	518026
R39	1,000	RES.CO.U.C 5.6 KOHMS 5% 1.4W	CR 25	516163
R40	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R41	1,000	RES.CO.U.M 499 OHMS 1% 1.8W	MRS 25	506559
R42 à R43	2,000	RES.CO.U.M 1.54KOHMS 1% 1.8W	MRS 25	518514
R44	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R45 à R46	2,000	RES.CO.U.M 1.54KOHMS 1% 1.8W	MRS 25	518514
R47 à R48	2,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R49 à R50	2,000	RES.CO.U.M 150 OHMS 1% 1.8W	MRS 25	790036
R51	1,000	RES.CO.U.C 10 KOHMS 5% 1.4W	CR 25	510513
R52	1,000	RES.CO.U.C 4.7 KOHMS 5% 1.4W	CR 25	510491
R53	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R54	1,000	RES.CO.U.M 499 OHMS 1% 1.8W	MRS 25	506559
R55	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R56	1,000	RES.CO.U.M 169 OHMS 1% 1.8W	MRS 25	518026
R57 à R58	2,000	RES.CO.U.C 4.7 KOHMS 5% 1.4W	CR 25	510491
R59	1,000	RES.CO.U.C 33 OHMS 5% 1.4W	CR 25	516031
R60	1,000	RES.CO.U.M 499 OHMS 1% 1.8W	MRS 25	506559
R61 à R62	2,000	RES.CO.U.M 825 OHMS 1% 1.8W	MRS 25	518387
R63	1,000	RES.CO.U.C 220 OHMS 5% 1.4W	CR 25	510319
R64 à R65	2,000	RES.CO.U.C 47 OHMS 5% 1.4W	CR 25	510254
R66 à R67	2,000	RES.CO.U.C 820 OHMS 5% 1.4W	CR 25	516129

Etabli:
Birmmi

Date:
18/07/90

Vérifié:

PRO. COM. MEDICAL

PCA SGM II
833681

Repères topologiques



KONTRON
INSTRUMENTS

22 120 N032

005

FEUILLE 2 sur 3 FEUILLES

Edi. Da

Repères	Quantité	DESIGNATION	Reference	Article
R68 à R69	2,000	RES.CO.U.M 61.9 OHMS 1% 1/8W	MRS 25	517798 3
R70	1,000	RES.CO.U.C 100 OHMS 5% 1/4W	CR 25	510289
R71	1,000	RES.CO.U.M 1.21KOHMS 1% 1/8W	MRS 25	518468 3
R72 à R73	2,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513 1
R75 à R77	3,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513 1
R78	1,000	RES.CO.U.C 2.2 KOHMS 5% 1/4W	CR 25	510432 1
R79	1,000	RES.CO.U.C 3.3 KOHMS 5% 1/4W	CR 25	510475 1
R80	1,000	RES.CO.U.M 6.81KOHMS 1% 1/8W	MRS 25	503592
R81	1,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R82	1,000	RES.CO.U.M 6.49KOHMS 1% 1/8W	MRS 25	518832 4
R83	1,000	POT.CERMET 1KOHMS HORI.20 TR	43P-102	510858 1
R84	1,000	RES.CO.U.M 3.01KOHMS 1% 1/8W	MRS 25	518662 3
R85 à R87	3,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R88	1,000	RES.CO.U.M 15 KOHMS 1% 1/8W	MRS 25	507903
R89 à R90	2,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R91	1,000	RES.CO.U.M 5.49KOHMS 1% 1/8W	MRS 25	510076
R92	1,000	POT.CERMET 2KOHMS HORI.20 TR	43P-202	516619 2
R93	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
T1	1,000	TRANSFORMATEUR RF Z1 4	MCL T4.1	832324 6
Z1	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704 5
Z2	1,000	IC REF TENSION 10V 0.3% TO 99	REF 01-CJ	734322 5
Z3	1,000	IC MUX ANALOGIQUE 8 VOIE DIL 16	4051BC-N	581615 4


Etabli:
Birmmi
Date:
18/07/90
Vérifié:

PRO. COM. MEDICAL
PCA SGM II
833681
Repères topologiques


 **KONTRON**
INSTRUMENTS

22 120 N032	005	
FEUILLE 3 sur 3 FEUILLES	Edi.	Date

Repères	Quantité	DESIGNATION	Référence	Article
99999	90,000	CONTACT H 816AU WRAP 0,61X0,59	W4 816C108	834238
99999	1,000	PCB LIFRO	03 120 B203-B	852805
99999	2,000	CONNEXION DE MASSE LIFRO SIG.1	03 124 A504-1	863971
J1	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941-707	834165
J2	1,000	EMBASE 41612 F 2/3X32PTS CI D	09 03 164 7825	838888

Etabli: Rivall	SIGMA 1 PCA LIFRO 852791 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 05/06/90		03 120 N003	001
Vérifié:		FEUILLE 1 sur 1FEUILLES	Edi. Dat

Repères	Quantité	DESIGNATION	Référence	Article
50	4,000	VIS C M2.5X 12 INOX	18/10	742082 8
51	4,000	VIS CL M3 X 5 INOX	18/10	506907 1
52	4,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647 7
150	1,000	PCB INSEC B SIGMA 1	03 120 B210-B	863505 16
151	1,000	FIXATION CONNECTEUR CONNECTRAL	03 110 A514- 2	858196 14
152	1,000	EMBASE BNC PLATINE META.F SOUD	R 141 407	711039 5
153	0,150	PAIRE SOUP.BLANC NOIR 0.22MM2	2 X KY 30-04	574309 3
154	0,020	GAINE RETRACT. BLANC.D 3.2 MM	SFM-32	717681 6
155	1,000	TORE FERRITE 9 X6 X3	3H2-AL650-15%	847887 13
156	1,000	COSSE RONDE 2.6 NUE OEIL L 9	399	842613 12
J1107	1,000	EMBASE HE10 VER M 2X13PTS CI C	65B EV 26M6 YCM	575240 4
J1120A	1,000	EMBASE HE13 VER M 2X04PTS CI C	320-08-2-LO-2	866466 17
J1120X	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165 10
J1120X	38,000	CONTACT H 816AU WRAP 0.61X0.59	816C108	834238 11
ST1 à ST4	0,200	FIL FEP WRAP-VERT 0.05MM2	KW03-30A2	853739 18

Etabli: Biemmi	SIGMA 1 PCA INSEC B SIGMA 1 863491 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 12/10/90		03 120 N010	002
Vérifié:		FEUILLE 1 sur 1FEUILLES	Edi. Dat

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]


+ CE DOCUMENT EST LA PROPRIETE DE ROCHE ET NE PEUT ETRE REPRODUIT. +
+ OU COMMUNIQUE SANS AUTORISATION ECRITE. +

[illegible]

[illegible]

[illegible]

Repères	Quantité	DESIGNATION	Reference	Article
99999	1,000	COSSE RONDE 4 BLEU.SERT S 2.6	31899	513342
99999	1,000	COSSE RONDE 3 BLEU.SERT S 2.6	32441	537012

Etabli: Barat	SIGMA 1 FIL DE MASSE SIGMA 1 866997 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 19/04/90		03 130 N013	002
Vérifié:		FEUILLE 1 sur 1FEUILLES	Edi. Da

Repères	Quantité	DESIGNATION	Référence	Article
99999	1,000	COSSE RONDE 4 BLEU.SERT S 2.6	31899	513342
99999	1,000	COSSE RONDE 3 BLEU.SERT S 2.6	32441	537012

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

REFERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
+CR01	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR02	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR03	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR04	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR05	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR06	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR07	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR08	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR09	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR10	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR11	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR12	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR13	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR14	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR15	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR16	1,000	DIODE VAR. 12V 22A620PF T092	BB212	842478
+CR17	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR18	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR19	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR20	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR21	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR22	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR23	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR24	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR25	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR26	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR27	1,000	DIODE ZEN. 10V 5% 0,5W D035	BZX55 C10	817155
+CR28	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR29	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR30	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR31	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR32	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR33	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR34	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR35	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR36	1,000	DIODE ZEN. 30V 5% 0,4W D035	BZX55 C30	525642
+CR37	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR38	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR39	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR40	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR41	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR42	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR43	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR44	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR45	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR46	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR47	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR48	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR49	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
+CR50	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
ETABLI				
RIVALL		SIGMA 1	KONTRON	
DATE				
0.11.89		+PCA SISEND 2		
VERIFIE				
		868094	03 120 N011	4 + 11/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT OU COMMUNIQUE SANS AUTDRISATION ECRITE.				1

+ REFERE	+ QUANTITE	+ D E S I G N A T I O N	+ REFERENCE	+ ARTICLE
+ CR51	+ 1,000	+ DIODE COM. 74V 10MA 4NS D035	+ 1N4148	+ 512044
+ CR52	+ 1,000	+ DIODE COM. 74V 10MA 4NS D035	+ 1N4148	+ 512044
+ CR53	+ 1,000	+ DIODE COM. 74V 10MA 4NS D035	+ 1N4148	+ 512044
+ CR54	+ 1,000	+ DIODE ZEN. 9,1V 5% 0,5W D035	+ BZX55 C9V1	+ 817147
+ CR55	+ 1,000	+ DIODE COM. 74V 10MA 4NS D035	+ 1N4148	+ 512044
+ C01	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C02	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C03	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C04	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C05	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C06	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C07	+ 1,000	+ COND.ELEC.D 4,7UF P2,5 50V	+ SEM1H4R7 D5H11	+ 707678
+ C08	+ 1,000	+ COND.CERA.R 100 PF 2 % 100 V	+ 680 10 101-P2,5	+ 510955
+ C09	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C10	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C11	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C12	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C13	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C14	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C15	+ 1,000	+ COND.TANT.G 4,7UF P 2,5 35V	+ TAP-SF	+ 709646
+ C16	+ 1,000	+ COND.TANT.G 4,7UF P 2,5 35V	+ TAP-SF	+ 709646
+ C17	+ 1,000	+ COND.TANT.G 4,7UF P 2,5 35V	+ TAP-SF	+ 709646
+ C18	+ 1,000	+ COND.TANT.G 4,7UF P 2,5 35V	+ TAP-SF	+ 709646
+ C19	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C20	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C21	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C22	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C23	+ 1,000	+ COND.POLY.R 1 NF 1% 630 VDC	+ FMR64 PAS 7,62	+ 573531
+ C24	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C25	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C26	+ 1,000	+ COND.CERA.R 5,6PF.25PF 100 V	+ 680 09 568-P2,5	+ 592927
+ C27	+ 1,000	+ COND.CERA.R 5,6PF.25PF 100 V	+ 680 09 568-P2,5	+ 592927
+ C28	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C29	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C30	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C31	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C32	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C33	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C34	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C35	+ 1,000	+ COND.CERA.R 10 NF-20+80 63 V	+ 629 08 103-P2,5	+ 511005
+ C36	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C37	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C38	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C39	+ 1,000	+ COND.ELEC.D 4,7UF P2,5 50V	+ SEM1H4R7 D5H11	+ 707678
+ C40	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C41	+ 1,000	+ COND.ELEC.D 4,7UF P2,5 50V	+ SEM1H4R7 D5H11	+ 707678
+ C43	+ 1,000	+ COND.TANT.G 4,7UF P 2,5 35V	+ TAP-SF	+ 709646
+ C44	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218
+ C45	+ 1,000	+ COND.TANT.G 10 UF P 2,5 35V	+ TAP-SF	+ 517429
+ C46	+ 1,000	+ COND.FILM R 100 NF20% 63 VDC	+ MKT1817 P 5	+ 812218

+ ETABLI	+ SIGMA 1	+ KONTRON
+ RIVALL		
+ DATE		
+ 0.11.89	+PCA SISEND 2	
+ VERIFIE		
	+ 868094	+ 03 120 N011 + 4 + 11/89

REFERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
+C47	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2,5	510955
+C48	1,000	COND.CERA.R 100 PF 2 % 100 V	680 10 101-P2,5	510955
+C49	1,000	COND.TANT.G 4,7UF P 2,5 35V	TAP-SF	709646
+C50	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C51	1,000	COND.TANT.G 6,8UF P 2,5 35V	TAP-SF	511277
+C52	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C53	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C54	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C55	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C56	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C57	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C58	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C59	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C60	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C61	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C62	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C63	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C64	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C65	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C66	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C67	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C71	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C72	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C73	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C74	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
+C75	1,000	COND.ELEC.D 4,7UF P2,5 50V	SEM1H4R7 D5H11	707678
+HY01	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY01	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY02	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY02	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY03	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY03	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY04	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY04	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY05	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY05	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY06	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY06	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY07	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY07	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY08	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY08	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY09	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY09	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY10	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY10	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY11	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY11	1,000	CIRCUIT BIDIP	SP640014- 1	865109
+HY12	1,000	BARRETTE 20 TULIPES CI D 2,54	SBU 20 OZ	842427
+HY12	1,000	CIRCUIT BIDIP	SP640014- 1	865109
ETABLI				
RIVALL		SIGMA 1	KONTRON	
DATE				
0.11.89		PCA SISEND 2		
VERIFIE				
		868094	03 120 N011	4 + 11/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT OU COMMUNIQUE SANS AUTORISATION ECRITE.				
				3

+REFERE	+QUANTITE	+D E S I G N A T I O N	+REFERENCE	+ARTICLE
+HY13	+1,000	+BARRETTE 20 TULIPES CI D 2,54	+SBU 20 OZ	+842427
+HY13	+1,000	+CIRCUIT BIDIP	+SP640014- 1	+865109
+HY14	+1,000	+BARRETTE 20 TULIPES CI D 2,54	+SBU 20 OZ	+842427
+HY14	+1,000	+CIRCUIT BIDIP	+SP640014- 1	+865109
+HY15	+1,000	+BARRETTE 20 TULIPES CI D 2,54	+SBU 20 OZ	+842427
+HY15	+1,000	+CIRCUIT BIDIP	+SP640014- 1	+865109
+HY16	+1,000	+BARRETTE 20 TULIPES CI D 2,54	+SBU 20 OZ	+842427
+HY16	+1,000	+CIRCUIT BIDIP	+SP640014- 1	+865109
+J1	+1,000	+EMBASE HE10 VER M 2X17PTS CI C	+65B EV 34M6 YCM	+575259
+J2	+1,000	+EMBASE HE10 VER M 2X17PTS CI C	+65B EV 34M6 YCM	+575259
+J3	+1,000	+EMBASE HE10 VER M 2X10PTS CI C	+65B EV 20M6 YCM	+575232
+J4	+1,000	+FICHE DIN41612 M 2X32PTS CI C	+09 03 164 7921	+838861
+L01	+1,000	+SELF N.B 10UH10% OR6 335MA	+53646 L10D 5	+595977
+L02	+1,000	+SELF N.B 10UH 1 A	+VK 200 2,5 3B	+702285
+L03	+1,000	+SELF N.B 10UH10% OR6 335MA	+53646 L10D 5	+595977
+L04	+1,000	+SELF N.B 10UH10% OR6 335MA	+53646 L10D 5	+595977
+L05	+1,000	+SELF N.B 100UH 2% 4R5 200MA	+2236 L10D 4	+798215
+L06	+1,000	+SELF N.B 100UH10% 8R 84MA	+1025-68 L7D2,5	+579998
+L07	+1,000	+SELF N.B 1UH10% OR9 390MA	+53822 L7D2,5	+837199
+L08	+1,000	+SELF N.B 1UH10% OR9 390MA	+53822 L7D2,5	+837199
+L09	+1,000	+SELF N.B 10UH10% OR6 335MA	+53646 L10D 5	+595977
+L10	+1,000	+SELF N.B 100UH 2% 4R5 200MA	+2236 L10D 4	+798215
+L11	+1,000	+SELF N.B 100UH 2% 4R5 200MA	+2236 L10D 4	+798215
+Q01	+1,000	+TRAN.PMOS-100V 6 A 40W TO220	+IRF9520	+850829
+Q02	+1,000	+TRAN.NPN 30V 0,2A 0,3W CB 76	+BC184	+577499
+Q03	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q04	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q05	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q06	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q07	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q08	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q09	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q10	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q12	+1,000	+TRAN.PNP 30V 25MA 1/4W CB 76	+BF324	+575151
+Q13	+1,000	+TRAN.PNP 30V 25MA 1/4W CB 76	+BF324	+575151
+Q14	+1,000	+TRAN.PNP 30V 0,2A 0,3W CB 76	+BC212-B	+593273
+Q15	+1,000	+INTERCALAIRE TO 18 H 2	+DE 011	+716413
+Q16	+1,000	+TRAN.NPN 30V 0,8A 0,4W TO 18	+2N2222A	+511366
+R001	+1,000	+RES.COUC 3,3 KOHMS 5% 1/4W	+CR 25	+510475
+R002	+1,000	+RES.COUC 12 KOHMS 5% 1/4W	+CR 25	+510521
+R003	+1,000	+RES.COUM 4,64KOHMS 1% 1/8W	+MR 25	+518751
+R004	+1,000	+RES.COUM 15,4 KOHMS 1% 1/8W	+MR 25	+518999
+R005	+1,000	+RES.COUM 19,6 KOHMS 1% 1/8W	+MR 25	+519049
+R006	+1,000	+POT.CERMET 10KOHMS VERT.25 TR	+64W-103	+525456
+R007	+1,000	+POT.CERMET 10KOHMS VERT.25 TR	+64W-103	+525456
+R008	+1,000	+POT.CERMET 10KOHMS VERT.25 TR	+64W-103	+525456
+R009	+1,000	+RES.COUM 15,4 KOHMS 1% 1/8W	+MR 25	+518999
+R010	+1,000	+RES.COUM 4,64KOHMS 1% 1/8W	+MR 25	+518751
+R011	+1,000	+RES.COUC 47 OHMS 5% 1/4W	+CR 25	+510254
+R012	+1,000	+RES.COUC 47 OHMS 5% 1/4W	+CR 25	+510254

+ETABLI	+RIVALL	+SIGMA 1	+KONTRON	
+DATE	+30.11.89	+PCA SISEND 2		
+VERIFIE				
		+868094	+03 120 N011	+4 + 11/89 +

CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT				
OU COMMUNIQUE SANS AUTORISATION ECRITE.				



REFERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
R013	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R014	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R015	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R016	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R017	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R018	1,000	RES,COU.C 47 OHMS 5% 1/4W	CR 25	510254
R019	1,000	RES,COU.C 47 KOHMS 5% 1/4W	CR 25	510602
R020	1,000	RES,COU.M 1 KOHMS 1% 1/8W	MR 25	510033
R021	1,000	RES,COU.M 1 KOHMS 1% 1/8W	MR 25	510033
R022	1,000	RES,COU.C 33 KOHMS 5% 1/4W	CR 25	516228
R023	1,000	RESEAU SIL 9X 4,7KOHMS 2% CDM	4310R-101-472	583057
R024	1,000	RESEAU SIL 9X 4,7KOHMS 2% CDM	4310R-101-472	583057
R025	1,000	RES,COU.M 1 KOHMS 1% 1/8W	MR 25	510033
R026	1,000	RES,COU.C 33 KOHMS 5% 1/4W	CR 25	516228
R027	1,000	RES,COU.C 3,3 KOHMS 5% 1/4W	CR 25	510475
R028	1,000	RES,COU.M 590 OHMS 1% 1/8W	MR 25	518301
R029	1,000	RES,COU.M 715 OHMS 1% 1/8W	MR 25	518352
R030	1,000	RES,COU.M 619 OHMS 1% 1/8W	MR 25	518328
R031	1,000	RES,COU.M 1 KOHMS 1% 1/8W	MR 25	510033
R032	1,000	RES,COU.M 2,74KOHMS 1% 1/8W	MR 25	518646
R033	1,000	RES,COU.M 2,26KOHMS 1% 1/8W	MR 25	518603
R034	1,000	RES,COU.M 590 OHMS 1% 1/8W	MR 25	518301
R035	1,000	RES,COU.M 1,21KOHMS 1% 1/8W	MR 25	518468
R036	1,000	RES,COU.M 1,33KOHMS 1% 1/8W	MR 25	518484
R037	1,000	RES,COU.M 301 OHMS 1% 1/8W	MR 25	518158
R038	1,000	RES,COU.M 249 OHMS 1% 1/8W	MR 25	518107
R039	1,000	RES,COU.M 187 OHMS 1% 1/8W	MR 25	518042
R040	1,000	RES,COU.M 154 OHMS 1% 1/8W	MR 25	517992
R041	1,000	RES,COU.M 121 OHMS 1% 1/8W	MR 25	517933
R042	1,000	RES,COU.M 90,9 OHMS 1% 1/8W	MR 25	510017
R043	1,000	RES,COU.M 301 OHMS 1% 1/8W	MR 25	518158
R044	1,000	RES,COU.M 75 OHMS 1% 1/8W	MR 25	517844
R045	1,000	RES,COU.M 42,2 KOHMS 1% 1/8W	MR 25	519227
R047	1,000	RES,COU.C 470 OHMS 5% 1/4W	CR 25	510378
R048	1,000	RES,COU.M 7,5 KOHMS 1% 1/8W	MR 25	510084
R049	1,000	RES,COU.M 10 KOHMS 1% 1/8W	MR 25	510106
R050	1,000	RES,COU.M 19,6 KOHMS 1% 1/8W	MR 25	519049
R051	1,000	RES,COU.M 11 KOHMS 1% 1/8W	MR 25	518913
R052	1,000	RES,COU.M 78,7 KOHMS 1% 1/8W	MR 25	519359
R053	1,000	RES,COU.M 10 KOHMS 1% 1/8W	MR 25	510106
R054	1,000	RES,COU.M 51,1 KOHMS 1% 1/8W	MR 25	519251
R055	1,000	RES,COU.M 51,1 KOHMS 1% 1/8W	MR 25	519251
R056	1,000	RES,COU.M 90,9 KOHMS 1% 1/8W	MR 25	519375
R057	1,000	RES,COU.M 90,9 KOHMS 1% 1/8W	MR 25	519375
R058	1,000	RES,COU.M 51,1 KOHMS 1% 1/8W	MR 25	519251
R059	1,000	RES,COU.M 51,1 KOHMS 1% 1/8W	MR 25	519251
R060	1,000	RES,COU.M 4,87KOHMS 1% 1/8W	MR 25	518778
R061	1,000	RES,COU.M 4,87KOHMS 1% 1/8W	MR 25	518778
R062	1,000	RES,COU.M 4,87KOHMS 1% 1/8W	MR 25	518778
R063	1,000	RES,COU.M 1 KOHMS 1% 1/8W	MR 25	510033
ETABLI				
RIVALL		SIGMA 1	KONTRON	
DATE				
0.11.89		PCA SISEND 2		
VERIFIE				
		868094	03 120 N011	4 + 11/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT				
OU COMMUNIQUE SANS AUTORISATION ECRITE.				
				5

REFERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
+R064	1,000	RES.COU.M 3,32KOHMS 1% 1/8W	MR 25	518689
+R065	1,000	RES.COU.M 3,32KOHMS 1% 1/8W	MR 25	518689
+R066	1,000	RES.COU.C 10 KOHMS 5% 1/4W	CR 25	510513
+R067	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R068	1,000	RES.COU.C 220 OHMS 5% 1/4W	CR 25	510319
+R069	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R070	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R071	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R072	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R073	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R074	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R075	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R076	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R077	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R078	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R079	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R080	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R081	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
+R082	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
+R083	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
+R084	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
+R085	1,000	RES.COU.C 100 OHMS 5% 1/4W	CR 25	510289
+R086	1,000	RESEAU SIL 9X 10 KOHMS 2% COM	4310R-101-103	549169
+R087	1,000	RESEAU SIL 5X 4,7KOHMS 2% COM	4306R-101-472	815292
+R088	1,000	RES.COU.M 1,1 KOHMS 1% 1/8W	MR 25	518433
+R089	1,000	RESEAU SIL 9X 4,7KOHMS 2% COM	4310R-101-472	583057
+R090	1,000	RESEAU SIL 7X 4,7KOHMS 2% COM	4308R-101-472	843067
+R091	1,000	RES.COU.C 33 OHMS 5% 1/4W	CR 25	516031
+R092	1,000	RES.COU.C 33 OHMS 5% 1/4W	CR 25	516031
+R093	1,000	RES.COU.C 33 OHMS 5% 1/4W	CR 25	516031
+R094	1,000	RES.COU.C 33 OHMS 5% 1/4W	CR 25	516031
+R095	1,000	RES.COU.C 470 OHMS 5% 1/4W	CR 25	510378
+R096	1,000	RES.COU.C 1 KOHMS 5% 1/4W	CR 25	510408
+R097	1,000	RES.COU.C 1 KOHMS 5% 1/4W	CR 25	510408
+R098	1,000	RES.COU.C 10 OHMS 5% 1/4W	CR 25	515973
+R099	1,000	RES.COU.C 1 KOHMS 5% 1/4W	CR 25	510408
+R100	1,000	RES.COU.M 1 KOHMS 1% 1/8W	MR 25	510033
+R101	1,000	RES.COU.M 4,87KOHMS 1% 1/8W	MR 25	518778
+R102	1,000	RES.COU.M 750 OHMS 1% 1/8W	MR 25	518360
+R103	1,000	RES.COU.M 8,25KOHMS 1% 1/8W	MR 25	518875
+TP0	3,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP01	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP02	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP03	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP04	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP05	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP06	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP07	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP08	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
+TP09	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
ETABLI				
RIVALL		SIGMA 1		KONTRON
DATE				
30.11.89		PCA SISEND 2		
VERIFIE				
		868094	03 120 N011	4 + 11/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT				
OU COMMUNIQUE SANS AUTORISATION ECRITE.				
				6

REPERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
TP12	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP13	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP14	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP15	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
TP16	1,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
T01	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T02	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T03	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T04	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T05	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T06	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T07	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T08	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T09	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T10	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T11	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T12	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T13	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T14	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T15	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
T16	1,000	TRANSFO.HF SEND SP600765	50 002 N016	843792
Z103	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z103	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	4052BC-N	575178
Z108	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z108	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z118	1,000	IC LS 6 INVERSEURS DIL14	SN74LS04-N	504319
Z201	1,000	INTERCALAIRE TO100 A DIL H 4,5	MON-10LF	822051
Z201	1,000	IC REF TENSION 10V 0,3 % TO 99	REF 01-CJ	734322
Z203	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704
Z206	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z206	1,000	DAC 08BITS 135NS 0,1 % SPEC.	DAC08-HF	549207
Z208	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z208	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z211	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704
Z212	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-CN	598704
Z213	1,000	IC MUX ANALOGIQUE 8 VOIE DIL16	4051BC-N	581615
Z214	1,000	IC MUX ANALOGIQUE 8 VOIE DIL16	4051BC-N	581615
Z215	1,000	IC HCT 8 BASCULE D DIL20	74HCT374-N	865095
Z216	1,000	IC HCT 8 BASCULE D DIL20	74HCT374-N	865095
Z217	1,000	IC HCT 8 BASCULE D DIL20	74HCT374-N	865095
Z218	1,000	IC LS DECODEUR OCTAL DIL16	SN74LS138-N	507423
Z308	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z308	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z401	1,000	IC LS 2 MONOST.RETRIG. DIL16	SN74LS123-N	500437
Z402	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335
Z403	1,000	IC STTL 4 OU.EXC. 2 ENT. DIL14	SN74S86-N	576085
Z404	1,000	IC STTL 4 NAND 2 ENT.TRI DIL14	SN74S132-N	598771
Z406	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z406	1,000	PREDIFFUSE TGA DIL40	L5A0401	870056
Z408	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
ETABLI				
RIVALL		SIGMA 1		KONTRON
DATE				
30.11.89		PCA SISEND 2		
VERIFIE				
		868094	03 120 N011	4 + 11/89
CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT				
OU COMMUNIQUE SANS AUTORISATION ECRITE.				

[illegible]

Repères	Quantité	DESIGNATION	Reference	Artic
1 à 7	7,000	LANG.FAST 1X2,8 NUE CID	Y 71	537144
1 à 7	7,000	TRANSFO. HF AAFRO SP610039- 4	03 120 N015	873225
1A	0,194	BARRETTE C 2X36PTS CI W 2.54	76350-103-72	598461
1B	1,000	EMBASE HE5 2.54 F 25PTS CI C	DB25S-564MT	883069
8 à 15	8,000	PLOT CID OEIL H 4.5 SOUD	Y 187	537152
50	6,000	VIS C M2,5X 6 INOX	18 10	354260
51	2,000	ECROU HU M2,5 INOX	18 10	544825
52	2,000	RONDELLE A DENT DE 2.5 INOX	18/10	355232
150	13,000	PLOT CID BROCHE D1 H 7.5 SESO	9009-0-10	842079
99999	1,000	ETIQUETTE SERIE VERSION C.I	SP680057_1	427721
99999	1,000	PCB AAFRO	03 120 8212-8	868124
C1 à C5	5,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C6	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C7	1,000	C.DECOUP. D 22UF P 3,5 63V	CEAFM1J220M	870625
C8 à C9	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C10	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C11	1,000	C.DECOUP. D 22UF P 3,5 63V	CEAFM1J220M	870625
C12	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C13	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C14	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C15 à C17	3,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C18	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C19	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2,5	517038
C20	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C21	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2,5	517038
C22	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C23	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C24 à C28	5,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C29	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C30 à C32	3,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C33	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C34 à C39	6,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C40	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C41	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C42 à C45	4,000	COND.CERA.R 1,5NF 10 % 100 V	630 08 152-P2,5	517143
C46	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C47	1,000	C.DECOUP. D 22UF P 3,5 63V	CEAFM1J220M	870625
C48 à C49	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C50	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C51	1,000	C.DECOUP. D 22UF P 3,5 63V	CEAFM1J220M	870625
C52	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C53	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C54 à C57	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C58	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2,5	517038
C59	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C60	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2,5	517038
C61	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C62	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C63 à C70	8,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C71	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C72 à C77	6,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C78	1,000	COND.ELEC.D 22UF P 2,5 63V	ECEA-1J-U220	875821
C79	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C80 à C83	4,000	COND.CERA.R 1,5NF 10 % 100 V	630 08 152-P2,5	517143
C84 à C85	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005

Etabli: Biemmi	SIGMA 1 PCA AAFRO 868116 Repères topologiques	 KONTRON INSTRUMENTS		
Date: 11/09/92		03 120 N012		005
Vérifié: 		FEUILLE 1 sur 6 FEUILLES		Edi. D.
Ce document est la propriété de KONTRON et ne peut être reproduit ou communiqué sans autorisation écrite				

Repères	Quantité	DESIGNATION	Reference	Artic
C86	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C87	1,000	C.DECOUP. D 22UF P 3.5 63V	CEAFM1J220M	870625
C88 à C89	2,000	COND.CERA.R 10 NF-20-80 63 V	629 08 103-P2.5	511005
C90	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C91	1,000	C.DECOUP. D 22UF P 3.5 63V	CEAFM1J220M	870625
C92	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C93	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C94 à C97	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C98	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C99	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C100	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C101	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C102	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C103 à C106	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C107 à C111	5,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C112 à C115	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C116	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C117 à C122	6,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C123	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C124 à C127	4,000	COND.CERA.R 1.5NF 10 % 100 V	630 08 152-P2.5	517143
C128	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C129	1,000	C.DECOUP. D 22UF P 3.5 63V	CEAFM1J220M	870625
C130 à C138	9,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C139	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C140	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C141 à C144	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C145	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C146	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C147 à C150	4,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C151 à C152	2,000	COND.CERA.R 1.5NF 10 % 100 V	630 08 152-P2.5	517143
C153	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C154	1,000	COND.ELEC.D 22UF P 2.5 63V	ECEA-1J-U220	875821
C155	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C156 à C169	14,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C170 à C174	5,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C175 à C177	3,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C178 à C179	2,000	COND.CERA.R 5.6PF.25PF 100 V	680 09 568-P2.5	592927
C180 à C181	2,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C182	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
CR1 à CR2	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR3	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR4 à CR5	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR6	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR7 à CR8	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR9 à CR10	2,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR11 à CR12	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR13	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR14 à CR15	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR16 à CR18	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR19 à CR20	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR21	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR22 à CR23	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
CR24 à CR28	5,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR29 à CR30	2,000	DIODE ZEN 6.2V 5% 0.5W DO35	BZX55 C6V2	527505
CR31 à CR32	2,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714

Etabli:
Biemmi

Date:
11/09/92

Vérifié:

[Signature]

SIGMA 1

PCA AAFRO
868116

Repères topologiques

 **KONTRON**
INSTRUMENTS

03 120 N012

005

FEUILLE 2 sur 6 FEUILLES

Edi. Da

Repères	Quantité	DESIGNATION	Reference	Artic
CR33 à CR35	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR36	1,000	DIODE VAR. 12V 22A620PF TO92	88212	842478
CR37 à CR39	3,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
J11	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259
J12	1,000	EMBASE HE10 VER M 2X17PTS CI C	65B EV 34M6 YCM	575259
L1 à L2	2,000	SELF N.B 10UH10% 0R6 335MA	53646 L10D 5	595977
L3	1,000	SELF N.B 1.5UH10% 0R2 560MA	53826 L7D2.5	583448
L4 à L5	2,000	SELF N.B 10UH10% 0R6 335MA	53646 L10D 5	595977
L6	1,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2.5	579998
L7 à L8	2,000	SELF N.B 0.82UH10% 0R8 420MA	1025-18 L7D2.5	875791
Q1 à Q2	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q3 à Q4	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q5 à Q6	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q7 à Q8	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q9	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413
Q9	1,000	TRAN.NFET 40V 50MA 0.3W TO 18	2N4856	812056
Q10 à Q11	2,000	TRAN.PMOS-100V 6 A 40W TO220	IRF9520	850829
Q12 à Q13	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q14 à Q15	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q16 à Q17	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q18 à Q19	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q20 à Q21	2,000	TRAN.PMOS-100V 6 A 40W TO220	IRF9520	850829
Q22 à Q23	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q24 à Q25	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q26 à Q27	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q28 à Q29	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q30 à Q31	2,000	TRAN.NPN 45V 1 A 0.6W TO 92	BC337-A	870692
Q32 à Q33	2,000	TRAN.PMOS-100V 6 A 40W TO220	IRF9520	850829
Q34	1,000	TRAN.PNP 60V 0.6A 0.4W TO 18	2N2907A	511390
Q34	1,000	INTERCALAIRE TO 18 H 2	DE 011	716413
Q35 à Q36	2,000	TRAN.PMOS 100V 4 A 20W TO220	IRF9510	870684
Q37 à Q38	2,000	TRAN.NMOS 100V 4 A 20W TO220	IRF510	870676
Q39	1,000	TRAN.PMOS-100V 6 A 40W TO220	IRF9520	850829
Q40 à Q41	2,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
R1 à R2	2,000	RES.COUC 10 OHMS 5% 1/4W	CR 25	515973
R3 à R8	6,000	PERLE 3.7X1.2X3.5 4B1	4322 020 34420	876232
R3 à R8	6,000	RES.COUC.M 2.15 OHMS 1% 1/8W	MRS 25	876259
R9	1,000	RES.COUC.M 12.1 OHMS 1% 1/8W	MRS 25	599514
R9	1,000	PERLE 3.7X1.2X3.5 4B1	4322 020 34420	876232
R10 à R13	4,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610
R14	1,000	RES.COUC.C 47 KOHMS 5% 1/4W	CR 25	510602
R15	1,000	RES.25PPM 20 KOHMS 1% 1/8W	58M	862037
R16	1,000	RES.COUC.C 47 KOHMS 5% 1/4W	CR 25	510602
R17	1,000	RES.25PPM 20 KOHMS 1% 1/8W	58M	862037
R18 à R20	3,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610
R21	1,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610
R22	1,000	RES.COUC.M 205 OHMS 1% 1/8W	MRS 25	518069
R23	1,000	RES.COUC.M 226 OHMS 1% 1/8W	MRS 25	518085
R24	1,000	RES.COUC.C 100 KOHMS 5% 1/4W	CR 25	510610
R25	1,000	RES.COUC.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R26	1,000	RES.25PPM 20 KOHMS 1% 1/8W	58M	862037
R27	1,000	RES.COUC.C 18 KOHMS 5% 1/4W	CR 25	510556
R28	1,000	RES.COUC.C 10 OHMS 5% 1/4W	CR 25	515973
R29	1,000	RES.25PPM 20 KOHMS 1% 1/8W	58M	862037
R30	1,000	RES.COUC.C 10 OHMS 5% 1/4W	CR 25	515973

Etabli:
Biemmi

Date:
11/09/92

Vérifié:

SIGMA 1

PCA AAFRO
868116

Repères topologiques



KONTRON
INSTRUMENTS

03 120 N012

005

FEUILLE 3 sur 6 FEUILLES | Edi. | D

Repères	Quantité	DESIGNATION	Reference	Artic
R31 à R33	3,000	RES.CO.U.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R34	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R35	1,000	RES.CO.U.C 18 KOHMS 5% 1/4W	CR 25	510556
R36 à R37	2,000	RES.CO.U.C 22 KOHMS 5% 1/4W	CR 25	510572
R38	1,000	PERLE 3.7X1.2X3.5 4B:	4322 020 34420	876232
R38	1,000	RES.CO.U.M 2.15 OHMS 1% 1/8W	MRS 25	876259
R39	1,000	RES.CO.U.M 2.05 KOHMS 1% 1/8W	MRS 25	518573
R40	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R41	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R42	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R43 à R46	4,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R47	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R48	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R49	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R50	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R51 à R54	4,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R55	1,000	RES.CO.U.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R56	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R57	1,000	RES.CO.U.C 18 KOHMS 5% 1/4W	CR 25	510556
R58	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R59	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R60	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R61 à R63	3,000	RES.CO.U.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R64	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R65	1,000	RES.CO.U.C 18 KOHMS 5% 1/4W	CR 25	510556
R66 à R67	2,000	RES.CO.U.C 22 KOHMS 5% 1/4W	CR 25	510572
R68	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R69	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R70	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R71 à R74	4,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R75	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R76	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R77	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R78	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R79 à R82	4,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R83	1,000	RES.CO.U.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R84	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R85	1,000	RES.CO.U.C 18 KOHMS 5% 1/4W	CR 25	510556
R86	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R87	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R88	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R89 à R91	3,000	RES.CO.U.M 78.7 KOHMS 1% 1/8W	MRS 25	519359
R92	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R93	1,000	RES.CO.U.C 18 KOHMS 5% 1/4W	CR 25	510556
R94 à R95	2,000	RES.CO.U.C 22 KOHMS 5% 1/4W	CR 25	510572
R96 à R97	2,000	RES.CO.U.C 1.2 KOHMS 5% 1/4W	CR 25	516147
R98	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R99	1,000	RES.CO.U.C 22 KOHMS 5% 1/4W	CR 25	510572
R100	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R101	1,000	RES.CO.U.C 10 OHMS 5% 1/4W	CR 25	515973
R102	1,000	RES.CO.U.M 1.54 KOHMS 1% 1/8W	MRS 25	518514
R103	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R104	1,000	RES.CO.U.M 1.54 KOHMS 1% 1/8W	MRS 25	518514
R105	1,000	RES.CO.U.C 3.3 KOHMS 5% 1/4W	CR 25	510475
R106 à R109	4,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610

Etabli:
Biemmi

Date:
11/09/92

Vérifié:

[Signature]

SIGMA 1

PCA AAFRO

868116

Repères topologiques



KONTRON
INSTRUMENTS



03 120 N012

005


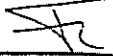
FEUILLE 4 sur 6 FEUILLES

Edi. ID



Repères	Quantité	DESIGNATION	Reference	Article
R110	1,000	RES.COUC 47 KOHMS 5% 1/4W	CR 25	510602
R111	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R112	1,000	RES.COUM 78.7 KOHMS 1% 1/8W	MRS 25	519359
R113	1,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R114	1,000	RES.COUC 10 OHMS 5% 1/4W	CR 25	515973
R115	1,000	RES.COUC 22 KOHMS 5% 1/4W	CR 25	510572
R116	1,000	RES.COUC 10 OHMS 5% 1/4W	CR 25	515973
R117	1,000	RES.COUC 18 KOHMS 5% 1/4W	CR 25	510556
R118	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R119	1,000	RES.COUM 78.7 KOHMS 1% 1/8W	MRS 25	519359
R120	1,000	RES.COUM 19.6 KOHMS 1% 1/8W	MRS 25	519049
R121	1,000	RES.COUM 15.4 KOHMS 1% 1/8W	MRS 25	518999
R122	1,000	RES.COUM 51.1 KOHMS 1% 1/8W	MRS 25	519251
R123 à R124	2,000	RES.COUM 4.64KOHMS 1% 1/8W	MRS 25	518751
R125	1,000	RES.COUC 470 OHMS 5% 1/4W	CR 25	510378
R126 à R128	3,000	POT.CERMET 10KOHMS VERT.25 TR	64W-103	525456
R129	1,000	RES.COUM 15.4 KOHMS 1% 1/8W	MRS 25	518999
R130	1,000	RES.COUM 51.1 KOHMS 1% 1/8W	MRS 25	519251
R131	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R132	1,000	RES.COUM 7.5 KOHMS 1% 1/8W	MRS 25	510084
R133	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491
R134	1,000	RES.COUM 4.87KOHMS 1% 1/8W	MRS 25	518778
R135	1,000	RES.COUM 90.9 KOHMS 1% 1/8W	MRS 25	519375
R136 à R137	2,000	RES.COUM 51.1 KOHMS 1% 1/8W	MRS 25	519251
R138	1,000	RES.COUM 90.9 KOHMS 1% 1/8W	MRS 25	519375
R139 à R140	2,000	RES.COUM 4.87KOHMS 1% 1/8W	MRS 25	518778
R141	1,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053
R142	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R143	1,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053
R144	1,000	RES.COUM 274 OHMS 1% 1/8W	MRS 25	518123
R145 à R147	3,000	RES.COUM 1.78KOHMS 1% 1/8W	MRS 25	518549
R148	1,000	RES.COUM 316 OHMS 1% 1/8W	MRS 25	518166
R149 à R150	2,000	RES.25PPM 20 KOHMS .1% 1/8W	58M	862037
R151	1,000	RES.COUM 10 KOHMS 1% 1/8W	MRS 25	510106
R152	1,000	RES.25PPM 10 KOHMS .1% 1/8W	58M	862053
R153	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R154	1,000	RESEAU SIL 7X 4.7KOHMS 2% COM	4308R-101-472	843067
R155	1,000	RES.COUC 4.7 KOHMS 5% 1/4W	CR 25	510491
R156	1,000	RES.COUM 3.32KOHMS 1% 1/8W	MRS 25	518689
R157	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R158	1,000	RES.COUM 3.32KOHMS 1% 1/8W	MRS 25	518689
R159	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R160	1,000	RES.COUC 220 OHMS 5% 1/4W	CR 25	510319
R161	1,000	RES.COUC 10 KOHMS 5% 1/4W	CR 25	510513
R162	1,000	RES.COUC 330 OHMS 5% 1/4W	CR 25	510343
REL1 à REL2	2,000	RELAIS REED 5V 1RT 3VA DIL14	D31C2110	864668
T8	1,000	TRANSFO. RF Z1 1	MCL T1-1	859567
T9	1,000	TRANSFO. RF Z1 9	MCL T9-1	849081
TP0	6,000	PLOT CID OEIL H 4.5 SOUD	Y 187	537152
Z102	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579
Z201	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z201	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z202	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579
Z203	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z203	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904

Etabli: Biemmi	SIGMA 1 PCA AAFRO 868116 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 11/09/92			
Vérifié: 		03 120 N012	005
		FEUILLE 5 sur 6FEUILLES	Edi. D
Ce document est la propriété de KONTRON et ne peut être reproduit ou communiqué sans autorisation écrite			



Repères	Quantité	DESIGNATION	Reference	Article
Z301	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z301	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z302	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579
Z303	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z303	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z401	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z401	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z402	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-BC	864579
Z403	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z403	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z404	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z404	1,000	IC REF TENSION 10V 0.15% DIL 8	REF 01-EZ	864587
Z406	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-BCDP	875945
Z407	1,000	IC FTTL 8 BUFFER 3E DIL20	74F244-PC	855626
Z408	1,000	IC FTTL 8 BUFFER 3E DIL20	74F244-PC	855626
Z409	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z409	1,000	PREDIFFUSE TGA DIL40	LSA0401	870056
Z410	1,000	SUPPORT DE IC SOUDE POUR DIL20	ICL 203-S6T	503169
Z410	1,000	MEM. PAL-AAFRO SP630116-1	PAL16L8	875201
Z411 à Z412	2,000	IC HCT 8 BASCULE D DIL20	74HCT374-N	865095
Z501	1,000	SUPPORT DE IC SOUDE POUR DILO8	ICL 083-S6T	728233
Z501	1,000	IC MOS DRIVER HORL.2 PH.DIL 8	DS0026C-N	811904
Z503	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z503	1,000	IC MUX ANALOG.2 X 4 VOIE DIL16	40523C-N	575178
Z504	1,000	AMPLI.OPER.QUAD. BIFET DIL14	TL084-BCDP	875945
Z505	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z505	1,000	DAC 08BITS 135NS 0.1 % SPEC.	DAC08-HP	549207
Z506	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z506	1,000	DAC 08BITS 135NS 0.1 % SPEC.	DAC08-HP	549207
Z507	1,000	SUPPORT DE IC SOUDE POUR DIL16	ICL 163-S6T	532983
Z507	1,000	DAC 08BITS 135NS 0.1 % SPEC.	DAC08-HP	549207
Z508	1,000	IC ACT REGISTRE 8BITS DIL20	74ACT794-PC	875953
Z510	1,000	IC STTL 4 NAND 2 ENT.TRI DIL14	SN74S132-N	598771
Z512	1,000	IC LS 2 BASCULE D DIL14	SN74LS74A-N	504335

Etabli: Biemmi	SIGMA 1 PCA AAFRO 868116 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 11/09/92			
Vérifié: 		03 120 N012	005
		FEUILLE 6 sur 6 FEUILLES	
Ce document est la propriété de KONTRON et ne peut être reproduit ou communiqué sans autorisation écrite			



Repères	Quantité	DESIGNATION	Référence	Article
1 à 72	72,000	INTERCALAIRE TO 18 H 2	DE 011	716413
9A	0,194	BARRETTE C 2X36PTS CI/W 2.54	76350-103-72	598461
99999	1,000	ETIQUETTE SERIE VERSION C.I	SP680057_1	427721
99999	1,000	PCB ATFOC	03 120 B213-B	868159
99999	1,000	PCA ATFOC SMD	03 120 N016	873918
C1 à C2	2,000	COND.ELEC.D 22UF P 2.5 35V	SEM1V220 D5H11	500283
C3 à C5	3,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C6	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C7 à C16	10,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C17	1,000	COND.CERA.R 2.7NF 10 % 100 V	630 08 272-P2.5	529540
C18	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C19 à C21	3,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C22	1,000	COND.ELEC.D 22UF P 2.5 35V	SEM1V220 D5H11	500283
C23 à C26	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C27 à C29	3,000	COND.ELEC.D 22UF P 2.5 35V	SEM1V220 D5H11	500283
C30	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C31	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C32	1,000	COND.TANT.G 1 UF P 2.5 35V	TAP-SP	517402
C33	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C34	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C35 à C41	7,000	COND.CERA.R 2.7NF 10 % 100 V	630 08 272-P2.5	529540
C42 à C49	8,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C50 à C56	7,000	COND.CERA.R 2.7NF 10 % 100 V	630 08 272-P2.5	529540
C57	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C58 à C61	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C62 à C64	3,000	COND.TANT.G 1 UF P 2.5 35V	TAP-SP	517402
C65	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C66	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C67 à C70	4,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C71	1,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2.5	517003
C72 à C76	5,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C77	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C78 à C91	14,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C92 à C100	9,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C101 à C114	14,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C115	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C116 à C172	57,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C173	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C174	1,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C175 à C186	12,000	COND.CERA.R 22 PF 2 % 100 V	680 10 229-P2.5	517038
C187 à C192	6,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C193	1,000	COND.TANT.G 10 UF P 2.5 35V	TAP-SP	517429
C194 à C195	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C196	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C197	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C199 à C200	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
C201	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C204	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2.5	511005
C205 à C206	2,000	COND.CERA.R 10 PF 2 % 100 V	680 10 109-P2.5	517003
C207 à C208	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2.5	511056
CR2	1,000	DIODE ZEN. 3.3V 5% 1 W D041	1N4728A	875856
CR3 à CR30	28,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR31 à CR48	18,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR49 à CR63	15,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR65 à CR79	15,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044

Etabli: Jaku.	SIGMA 1 PCA ATFOC 868132 Repères topologiques	 KONTRON INSTRUMENTS		
Date: 16/07/92		03 120 N013		002
Vérifié: 		FEUILLE 1 sur 6 FEUILLES		Edi Da


Repères	Quantité	DESIGNATION	Reference	Article
CR81 à CR95	15,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR97	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR99	1,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR101 à CR105	5,000	DIODE COM. 74V 10MA 4NS DO35	1N4148	512044
CR106 à CR119	14,000	DIODE COM. 50V 0.6A 6NS DO35	1N4150	870714
J1	1,000	EMBASE HE13 F 2X07PTS CI D	310-14-2-YO-2	870641
J2	1,000	EMBASE HE13 F 2X18PTS CI D	310-36-2-YO-2	870633
J3	1,000	EMBASE HE13 F 2X07PTS CI D	310-14-2-YO-2	870641
J4	1,000	EMBASE HE13 F 2X18PTS CI D	310-36-2-YO-2	870633
J91	1,000	EMBASE HE10 VER M 2X17PTS CI C	658 EV 34M6 YCM	575259
J92	1,000	EMBASE HE10 VER M 2X17PTS CI C	658 EV 34M6 YCM	575259
J93	0,277	BARRETTE C 2X36PTS CI/W 2,54	76350-103-72	598461
L1 à L3	3,000	SELF N.B 10UH 1 A	VK 200 2,5 38	702285
L4 à L5	2,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2,5	579998
L6 à L11	6,000	SELF BL. 220UH10% 5R 130MA	1641-224 L11D 5	595888
L12 à L13	2,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2,5	579998
L14 à L15	2,000	SELF N.B 220UH10% 21R 52MA	1025-76 L7D2,5	580007
L16 à L29	14,000	SELF N B 100UH10% 8R 84MA	1025-68 L7D2,5	579998
L30	1,000	SELF N.B 56UH 2% 3R1 240MA	2233 L10D 4	798185
Q1 à Q72	72,000	TRAN.DMOS 20V 50MA 0,3W TO 72	BSD215	862371
Q73	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q74	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q75	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q76	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q77	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q78	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q79	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q80	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q81	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q82	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q83	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q84 à Q92	9,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q93	1,000	TRAN.NFET 40V 50MA 0,3W TO 18	2N4856	812056
Q94	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q95	1,000	TRAN.NPN 45V 1 A 0,6W TO 92	BC337-A	870692
Q96	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q97	1,000	TRAN.NPN 45V 1 A 0,6W TO 92	BC337-A	870692
Q98	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q99 à Q101	3,000	TRAN.NPN 45V 1 A 0,6W TO 92	BC337-A	870692
Q102	1,000	TRAN.PNP 30V 25MA 1/4W CB 76	BF324	575151
Q103	1,000	TRAN.PNP 45V 1 A 0,6W TO 92	BC327-A	870706
Q104 à Q106	3,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
Q108 à Q110	3,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
Q111	1,000	TRAN.NPN 45V 1 A 0,6W TO 92	BC337-A	870692
Q112 à Q120	9,000	TRAN.PNP 30V 0,2A 0,3W CB 76	BC212-B	593273
Q121	1,000	TRAN.NFET 40V 50MA 0,3W TO 18	2N4856	812056
Q122 à Q124	3,000	TRAN.NPN 30V 0,2A 0,3W CB 76	BC184	577499
Q125	1,000	TRAN.NFET 40V 50MA 0,3W TO 18	2N4856	812056
R1	1,000	RES.COUC 2,2 OHMS 5% 1/4W	CR 25	578622
R2 à R4	3,000	RES.COUC 4,7 OHMS 5% 1/4W	CR 25	591297
R5	1,000	RES.COUC 825 OHMS 1% 1/8W	MRS 25	518387
R8	1,000	RES.COUC 1,21KOHMS 1% 1/8W	MRS 25	518468
R9	1,000	RES.COUC 237 OHMS 1% 1/8W	MRS 25	518093
R10	1,000	RES.COUC 100 OHMS 5% 1/4W	CR 25	510289
R11	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254

Etabli: Jaku.	SIGMA 1 PCA ATFOC 868132 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 16/07/92			
Vérifié: 		03 120 N013	002
		FEUILLE 2 sur 6 FEUILLES	

Repères	Quantité	DESIGNATION	Référence	Article
R12	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R13	1,000	RES.COUM 787 OHMS 1% 1/8W	MRS 25	518379
R14	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R15	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R16	1,000	RES.COUM 787 OHMS 1% 1/8W	MRS 25	518379
R17 à R21	5,000	RES.COUM 68,1 OHMS 1% 1/8W	MRS 25	517828
R22	1,000	RES.COUM 2,05KOHMS 1% 1/8W	MRS 25	518573
R23	1,000	RES.COUM 4,02KOHMS 1% 1/8W	MRS 25	518727
R24	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R25	1,000	RES.COUM 787 OHMS 1% 1/8W	MRS 25	518379
R26	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R27	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R28	1,000	RES.COUM 787 OHMS 1% 1/8W	MRS 25	518379
R29	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R30	1,000	RES.COUM 787 OHMS 1% 1/8W	MRS 25	518379
R31	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R32 à R38	7,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R39	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R40	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R41	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R42	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R43	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R44	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R45	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R46	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R47	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R48	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R49	1,000	RES.COUC 22 OHMS 5% 1/4W	CR 25	516015
R50	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R51	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R52	1,000	RES.COUM 866 OHMS 1% 1/8W	MRS 25	518395
R53	1,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R54	1,000	RES.COUM 68,1 OHMS 1% 1/8W	MRS 25	517828
R55	1,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R56	1,000	RES.COUM 68,1 OHMS 1% 1/8W	MRS 25	517828
R57 à R58	2,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R59	1,000	RES.COUM 1,33KOHMS 1% 1/8W	MRS 25	518484
R60	1,000	RES.COUM 1 KOHMS 1% 1/8W	MRS 25	510033
R61	1,000	RES.COUC 3,3 KOHMS 5% 1/4W	CR 25	510475
R62	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R63' à R74	12,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R75	1,000	RES.COUC 3,3 KOHMS 5% 1/4W	CR 25	510475
R76 à R78	3,000	RES.COUC 47 OHMS 5% 1/4W	CR 25	510254
R79	1,000	RES.COUC 3,3 KOHMS 5% 1/4W	CR 25	510475
R80 à R81	2,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906
R82 à R86	5,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R87	1,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906
R88 à R90	3,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R91	1,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906
R92 à R95	4,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R96	1,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906
R97 à R98	2,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R99	1,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906
R100 à R102	3,000	RES.COUM 154 OHMS 1% 1/8W	MRS 25	517992
R103	1,000	RES.COUM 48,7 OHMS 1% 1/8W	MRS 25	787906

Etabli: Jaku.	SIGMA 1 PCA ATFOC 868132 Repères topologiques		
Date: 16/07/92		03 120 N013	002
Vérifié: 		FEUILLE 3 sur 6 FEUILLES	Edi. De

Repères	Quantité	DESIGNATION	Reference	Article
R104 à R105	2,000	RES.CO.U.M 154 OHMS 1% 1/8W	MRS 25	517992
R106 à R112	7,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R113 à R114	2,000	RES.CO.U.M 1 KOHMS 1% 1/8W	MRS 25	510033
R115	1,000	RES.CO.U.M 787 OHMS 1% 1/8W	MRS 25	518379
R116	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R117	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R118	1,000	RES.CO.U.C 220 OHMS 5% 1/4W	CR 25	510319
R119	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R120	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R121	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R122	1,000	RES.CO.U.C 220 OHMS 5% 1/4W	CR 25	510319
R123	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R124	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R125	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R126	1,000	RES.CO.U.C 220 OHMS 5% 1/4W	CR 25	510319
R127	1,000	RES.CO.U.C 1 KOHMS 5% 1/4W	CR 25	510408
R128 à R130	3,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R131	1,000	RES.CO.U.M 205 OHMS 1% 1/8W	MRS 25	518069
R132	1,000	RES.CO.U.M 100 OHMS 1% 1/8W	MRS 25	517895
R133	1,000	RES.CO.U.M 205 OHMS 1% 1/8W	MRS 25	518069
R134	1,000	RES.CO.U.M 100 OHMS 1% 1/8W	MRS 25	517895
R135	1,000	RES.CO.U.M 205 OHMS 1% 1/8W	MRS 25	518069
R136	1,000	RES.CO.U.M 100 OHMS 1% 1/8W	MRS 25	517895
R137	1,000	RES.CO.U.M 51.1 OHMS 1% 1/8W	MRS 25	517747
R138	1,000	RES.CO.U.C 22 OHMS 5% 1/4W	CR 25	516015
R139	1,000	RES.CO.U.M 787 OHMS 1% 1/8W	MRS 25	518379
R140	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R141	1,000	RES.CO.U.M 154 OHMS 1% 1/8W	MRS 25	517992
R142	1,000	RES.CO.U.M 787 OHMS 1% 1/8W	MRS 25	518379
R143 à R185	43,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R186 à R192	7,000	RES.CO.U.M 48.7 OHMS 1% 1/8W	MRS 25	787906
R193 à R213	21,000	RES.CO.U.M 154 OHMS 1% 1/8W	MRS 25	517992
R214 à R242	29,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R243	1,000	RES.CO.U.C 3.3 KOHMS 5% 1/4W	CR 25	510475
R244	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R245	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R246	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R247	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R248 à R249	2,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R250	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R251	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R252	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R253	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R254 à R255	2,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R256	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R257	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R258	1,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R259	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R260	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R261	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R262	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R263	1,000	RES.CO.U.M 5.11 OHMS 1% 1/8W	MRS 25	870668
R264	1,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R265	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R266	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263

Etabli:	SIGMA 1 PCA ATFOC 868132 Repères topologiques	 KONTRON INSTRUMENTS		
Jaku.				
Date:				
16/07/92			03 120 N013	002
Vérifié:			FEUILLE 4 sur 6FEUILLES	Edi. De

Repères	Quantité	DESIGNATION	Reference	Article
R269	1,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R271	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R272	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R273	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R274	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R275 à R276	2,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R277	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R278	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R279	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R280	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R281 à R282	2,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R283	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R284	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R285	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R286	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R287 à R288	2,000	RES.CO.U.M 422 OHMS 1% 1/8W	MRS 25	518220
R289	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R290	1,000	RES.CO.U.M 511 OHMS 1% 1/8W	MRS 25	518263
R291	1,000	RES.CO.U.M 215 OHMS 1% 1/8W	MRS 25	518077
R292	1,000	RES.CO.U.C 47 KOHMS 5% 1/4W	CR 25	510602
R293	1,000	RES.CO.U.M 48,7 OHMS 1% 1/8W	MRS 25	787906
R294	1,000	RES.CO.U.M 6,81KOHMS 1% 1/8W	MRS 25	503592
R295	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R296	1,000	RES.CO.U.C 33 OHMS 5% 1/4W	CR 25	516031
R297	1,000	RES.CO.U.M 2,74KOHMS 1% 1/8W	MRS 25	518646
R298	1,000	RES.CO.U.C 33 OHMS 5% 1/4W	CR 25	516031
R299	1,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R300	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R301	1,000	RES.CO.U.M 2,74KOHMS 1% 1/8W	MRS 25	518646
R303	1,000	RES.CO.U.M 909 OHMS 1% 1/8W	MRS 25	518409
R305	1,000	RES.CO.U.M 10 KOHMS 1% 1/8W	MRS 25	510106
R306	1,000	RES.CO.U.M 1 KOHMS 1% 1/8W	MRS 25	510033
R307	1,000	RES.CO.U.M 1,54KOHMS 1% 1/8W	MRS 25	518514
R308	1,000	RES.CO.U.C 47 OHMS 5% 1/4W	CR 25	510254
R309	1,000	RES.CO.U.C 33 OHMS 5% 1/4W	CR 25	516031
R310	1,000	RES.CO.U.M 48,7 OHMS 1% 1/8W	MRS 25	787906
R311	1,000	RES.CO.U.M 1,4 KOHMS 1% 1/8W	MRS 25	518492
R312	1,000	RES.CO.U.C 100 KOHMS 5% 1/4W	CR 25	510610
R313	1,000	RES.CO.U.C 10 KOHMS 5% 1/4W	CR 25	510513
R314	1,000	RES.CO.U.C 220 KOHMS 5% 1/4W	CR 25	516295
ST1	1,000	CAVALIER ROUGE P 2,54 ISOLE	313-1365-000402	596086
ST1	0,055	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
ST2	1,000	CAVALIER ROUGE P 2,54 ISOLE	313-1365-000402	596086
ST2	0,055	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
T1 à T7	7,000	TRANSFO. RF Z1.9	MCL T9-1	849081
T8	1,000	TRANSFO. RF Z1.4	MCL T4-1	832324
TP0	11,000	PLOT CI D OEIL H 4,5 SOUD	Y 187	537152
Z101	1,000	SUPPORT DE IC SOUDE POUR DIL08	ICL 083-S6T	728233
Z101	1,000	IC REF TENSION 5V 0,3 % DIL 8	REF 02-CP	855766
Z201	1,000	REGUL.POS.AJUS.1,5A 15W TO220	LM317-T	598658
Z301	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z301	1,000	L.A.R.100 OHMS 199,8 NS	SP640025-1	870919
Z401	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828
Z401	1,000	L.A.R.100 OHMS 333 NS	SP640024-1	870897
Z501	1,000	SUPPORT DE IC SOUDE POUR DIL40	ICL 406-S7T	581828

Etabli:
Jaku.

Date:
16/07/92

Vérifié:

[Signature]

SIGMA 1

PCA ATFOC

868132

Repères topologiques



KONTRON
INSTRUMENTS

03 120 N013

002

FEUILLE 5 sur 6 FEUILLES

Edi. Da

Repères	Quantité	DESIGNATION	Référence	Article
z501	1,000	L.A.R.100 OHMS 468.9 NS	SP640023- 1	870889

Etabli:
Jaku.

Date:
16/07/92

Vérifié:

[Signature]

SIGMA 1

PCA ATFOC
868132

Repères topologiques





KONTRON
INSTRUMENTS

03 120 N013


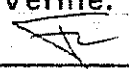
002

FEUILLE 6 sur 6 FEUILLES | Edi. | Da

Repères	Quantité	DESIGNATION	Reference	Article
1	1,000	PLATINE CAPOT HE 5 CABLE MASIC	03 124 A506- 1	873888
2	1,000	CAPOT HE 5 CABLE MASIC	03 124 A507- 1	873896
50	4,000	VIS C M2,5X 8 INOX	18/10	742058
51	4,000	VIS CL M 3 X 5 INOX	18/10	506907
52	4,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
53	2,000	ECROU HU M2,5 INOX	18/10	544825
54	4,000	VIS CL M2,5X 5 INOX	18/10	354457
55	2,000	VIS C M2,5X 10 INOX	18/10	354279
150	0,650	CABLE 11PAIR.BLG.J32+1BLG.J28	SP620009- 1	886149
151	18,000	CONTACT H 816AU BAND 0.01A0,05	816C119	869368
152	1,000	FICHE HE5 M 25PTS SOUD	DB 25P K87	883115
153	0,150	GAINE RETRACT. BLANC.D 1,6 MM	SFM-16	509078
154	0,200	GAINE RETRACT. BLANC.D 2,4 MM	SFM-24	717665
155	0,035	GAINE RETRACT. NOIRE D 9,5 MM	SCL-3/8	871028
156	1,000	EMBASE BNC PLATINE META.F SOUD	R 141 407	711039
157	0,150	PAIRE SOUP.BLANC/NOIR 0,22MM2	2 X KY 30-04	574309
158	1,000	TORE FERRITE 9 X6 X3	3H2-AL650-15%	847887
159	1,000	COSSE RONDE 2,6 NUE OEIL L 9	399	842613
160	2,000	COLLIER L 2,6MM DMAX 16 MM	T23R	504440
161	1,000	PCB MASIC	03 120 B214-B	868175
162	1,000	FIXATION CONNECTEUR CONNECTRAL	03 110 A514- 2	858196
163	38,000	CONTACT H 816AU WRAP 0,61X0,59	816C108	834238
164	1,000	COSSE RONDE 3,2 NUE OEIL L12,5	519	537063
165	0,160	TUYAU SILASTIC 0,078X0,125" 3%		729361
99999	1,000	ETIQUETTE SERIE VERSION C.I	SP680057_1	427721
J1107	1,000	EMBASE HE10 VER M 2X13PTS CI C	658 EV 26M6 YCM	575240
J1120	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165

Etabli: Barat	SIGMA 1 PCA MASIC 868167 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 20/03/92			
Vérifié: 		03 120 N014	003
		FEUILLE 1 sur 1 FEUILLES	

Repères	Quantité	DESIGNATION	Référence	Article
1	1,000	PLATINE CAPOT HE 5 CABLE MASIC	03 124 A506- 1	873888
2	1,000	CAPOT HE 5 CABLE MASIC	03 124 A507- 1	873896
50	4,000	VIS C M2,5X 8 INOX	18/10	742058
51	4,000	VIS CL M 3 X 5 INOX	18/10	506907
52	4,000	RONDELLE CONTACT M 3 CD.BI	55 03 11.24	741647
53	2,000	ECROU HU M2,5 INOX	18/10	544825
54	4,000	VIS CL M2.5X 5 INOX	18/10	354457
55	2,000	VIS C M2,5X 10 INOX	18/10	354279
150	0,650	CABLE 11PAIR.BLG.J32+1BLG.J28	SP620009- 1	886149
151	18,000	CONTACT H 816AU BAND 0.01A0,05	816C119	869368
152	1,000	FICHE HE5 M 25PTS SOUD	DB 25P K87	883115
153	0,150	GAINE RETRACT. BLANC.D 1,6 MM	SFM-16	509078
154	0,200	GAINE RETRACT. BLANC.D 2,4 MM	SFM-24	717665
155	0,035	GAINE RETRACT. NOIRE D 9,5 MM	SCL-3/8	871028
156	1,000	EMBASE BNC PLATINE META.F SOUD	R 141 407	711039
157	0,150	PAIRE SOUP.BLANC/NOIR 0,22MM2	2 X KY 30-04	574309
158	1,000	TORE FERRITE 9 X6 X3	3H2-AL650-15%	847887
159	1,000	COSSE RONDE 2,6 NUE OEIL L 9	399	842613
160	2,000	COLLIER L 2,6MM DMAX 16 MM	T23R	504440
161	1,000	PCB MASIC	03 120 B214-B	868175
162	1,000	FIXATION CONNECTEUR CONNECTRAL	03 110 A514- 2	858196
163	38,000	CONTACT H 816AU WRAP 0,61X0,59	816C108	834238
164	1,000	COSSE RONDE 3,2 NUE OEIL L12,5	519	537063
165	0,160	TUYAU SILASTIC 0.078X0,125" 3%		729361
99999	1,000	ETIQUETTE SERIE/VERSION C.I	SP680057_1	427721
J1107	1,000	EMBASE HE10 VER M 2X13PTS CI C	65B EV 26M6 YCM	575240
J1120	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165

Etabli: Barat	SIGMA 1 PCA MASIC 868167 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 20/03/92		03 120 N014	003
Vérifié: 		FEUILLE 1 sur 1FEUILLES	Edi. Da

[illegible]

Repères	Quantité	DESIGNATION	Référence	Article
1	1,000	CHASSIS SIGMA 1	03 110 D501- 4	858021
2	1,000	PCA SGM II	22 120 N032	833681
2	1,000	GOUSSET DROIT FACE AV SIGMA 1	03 110 C505- 4	858072
3	1,000	GOUSSET GAUCHE FACE AV SIGMA 1	03 110 C505- 4	858757
4	1,000	BLINDAGE CENTRAL SIGMA 1	03 110 C503- 3	858056
5	1,000	SUPPORT VENTILATEUR SIGMA 1	03 110 C504- 4	858064
6	1,000	PLAQUE AR SIGMA 1 SERIGRAPHIEE	03 110 C502- 6	858048
7	4,000	PIED ENROULEUR	702220	859788
8	4,000	EMBASE PIED SIGMA 1	03 110 A515- 2	858218
9	1,000	PLAQUE D'EQUIPOTENTIALITE S.1	03 110 A520- 1	858277
10	1,000	TIRANT DROIT SIGMA 1	03 110 B506- 1	858099
11	1,000	TIRANT GAUCHE SIGMA 1	03 110 B506- 1	858765
12	1,000	GOUSSET BLINDAGE CENTRAL SIG.1	03 110 A511- 1	858153
13	2,000	BRIDE SUPPORT POUR SERIE 820	820M001	857939
14	1,000	GRILLE METAL. VENTIL. 88X 88	LZ32P	848719
16	1,000	EMBASE M.A FUSIBLES CLIP.CEE22	8843-463	859443
17	1,000	SUPPORT CARTE INF. TVM SIGMA 1	03 115 B502- 3	858447
18	7,000	GLISSIERE X01 /CI L 40 CLIPS	1850	859761
19	4,000	PLAQUETTE ECRou BNC	03 110 A513- 1	858188
20	1,000	PLAQUETTE ECRou HE 5 SIGMA 1	03 110 A524- 1	860328
21	1,000	PLATI.SUPPOR.CONNECT.SERIL+SC	03 110 B531- 3	862894
22	1,000	INTERCALAIRE ISOLANT SIGMA 1	03 110 C526- 2	860344
23	1,000	PANIER ANALOGIQUE SIGMA 1 AA	03 110 B538- 4	874507
24	16,000	GLISSIERE X01 /CI L105 CLIPS	58-30-40	859753
25	1,000	PANIER LOGIQUE SIGMA 1 L+SC	03 110 B532- 4	862908
27	1,000	ISOLATEUR EXTERIEUR ECG COLLE	03 110 N530	860816
29	1,000	BLINDAGE ECG	03 110 B510- 2	858145
30	1,000	FACE AV INF. POT. SERIGRAPHIEE	03 110 A509- 4	858137
31	1,000	ENTRETOISE ALIM. SIGMA 1	03 110 A508- 3	858129
32	1,000	FACE AVANT SIGMA 1 PEINTE	03 150 D502TV	858285
33	1,000	FACE DECOR SIGMA 1 MONTE COLLE	03 150 C501- 3	856339
34	1,000	ECROU SWITCH PHOTO	05 010 A524- 3	752827
35	1,000	PLATINE SUPPORT INTER. SIGMA 1	03 150 A505- 2	858315
36	2,000	SUPPORT CRT CLINTON SIGMA 1	03 150 B513- 1	408093
38	1,000	ECRAN TUBE SIGMA 1	03 150 A506- 2	858323
39	1,000	FIXATION SOCLE FACE AV SIGMA 1	03 150 A507- 1	858331
40	1,000	SUPPORT CORNET SIGMA 1	03 150 A509- 3	858366
41	1,000	AXE PHOTO MOBILE	21 110 A511- 1	565954
42	1,000	AXE INF. CHARNIERE PHOTO SIG.1	03 110 A527- 2	861405
43	1,000	ECROU DE L'AXE PHOTO MOBILE	21 110 A513- 2	565989
44	1,000	POUSOIR C.AUX. BIP. P.P SOUDE	70060-010	855928
45	1,000	ALIM. A TENSIONS MULTIPLES	SP640003- 9	874914
46	1,000	BLINDAGE LIFRO SIGMA 1 L+SC	03 110 B535- 3	862932
47	7,000	ISOLANT INTERCARTE SIGMA 1	03 110 B537- 1	866989
50	23,000	RIVET A CLOU 4 X11.6 AL/AC	1661-0512	862061
51	2,000	VIS C POZIDRIV M2,5X 8 CH.NOI	TCAR POZI.CH.NO	861693
52	2,000	ECROU HU M2,5 INOX	18/10	544825
53	4,000	RONDELLE PLATE MU 2,5 INOX	18/10	544701
54	4,000	COLONNETTE M4 X25 HEX T CD.BI	ENMET 7	793477
55	4,000	VIS F:90 POZ.M 4 X 12 CH.NOI	TFAR POZI.CH.NO	861723
56	18,000	VIS C POZIDRIV M2,5X 8 CH.NOI	TCAR POZI.CH.NO	861693
57	3,000	PLAQUETTE A RESSORT/HE5	D 110277	711144
58	8,000	VIS C POZIDRIV M 3 X 8 CH.NOI	TCAR POZI.CH.NO	861685
59	22,000	ECROU CAGE M 4 E 4 NYLON	CP3514	859745
60	68,000	VIS C POZ.M 4 X 10 CH.NOI	TCAR POZI.CH.NO	861707

Etabli:
Diakite

Date:
31/07/92

Vérifié:



SIGMA 1

EQUIPE.CHASSIS SIGMA 1 ANGLAIS
862835

Repères topologiques





KONTRON
INSTRUMENTS

03 110 N560


011

FEUILLE 1 sur 4FEUILLES | Edi.



Repères	Quantité	DESIGNATION	Reference	Article
61	68,000	RONDELLE CONTACT M 4 CD.BI	55 04 11 24	506524
62	10,000	VIS C POZIDRIV M 3 X 12 CH.NOI	TCAR.POZI.CH.NO	861650
63	6,000	ATTACHE CABLE CLIP.11X5.6	WS-1RA	861790
64	2,000	BOUTON NOIR NU 21X17 X6	S210006	865206
65	2,000	CAPUCHON NOIR NU /BOUT. D21	C 210	578177
66	8,000	VIS C POZ.M 4 X 16 CH.NOI	TCAR POZI.CH.NO	861715
67	2,000	VIS C POZIDRIV M 3 X 6 CH.NOI	TCAR POZI.CH.NO	861634
68	1,000	ECROU HU M 6 CD.BI		355828
69	2,000	ECROU HU M2.5 INOX	18/10	544825
70	2,000	VIS CL M2.5X 5 INOX	18/10	354457
71	19,000	VIS C POZIDRIV M 3 X 8 CH.NOI	TCAR POZI.CH.NO	861685
72	12,000	ECROU HU M3 INOX	18/10	355747
73	27,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
74	0,600	PROFIL.NEOP.ADHE.NOIR 10X 5	22505	792977
75	1,000	RONDELLE PLATE MU 4 NYLON		546070
76	1,000	BRIDE TVM SIGMA 1	03 110 A525- 2	860336 1
77	2,000	COSSE RONDE 3.2 NUE OEIL L12.5	519	537063
78	1,000	RONDELLE A DENT DE 6 CD.BI		357782
79	12,000	ECROU HU M 4 INOX	18/10	544833
80	5,000	ECROU CAGE M 4 E 2 ZING.	CJ4504-3	859737 1
81	2,000	ENTRETOISE CLIP/CLIP D4 H 6.35	CBS-4R	857688
82	2,000	RONDELLE A DENT DE 4 INOX	18/10	544612
83	1,000	BOITIER HERMAPHROD.3PTS 5.08	820-1001	857920
84	2,000	CONTACT H 816AU SERT.0,4 A0,9	816C102	834211
85	2,000	ENTRETOISE CLIP/PLAT D4 H 4,76	PS-3R	862088 1
86	4,000	ECROU RAPID M 3 E2.3	NU 503-2	740969
87	2,000	RONDELLE A DENT DE 5 CD.BI		544620
88	1,000	ECROU HU M 5 CD.BI		355801
89	2,000	VIS C M 2 X 6 INOX	18/10	354252
91	2,000	VIS C M2.5X 12 INOX	18/10	742082
92	1,000	GRILLE METAL VENTIL. 115X115	ASP120	582891
93	12,000	BOUTON NOIR/POT.RECTILIGN.PREH	10694-111	862231 1
94	2,000	BRIDE PLAQUE D'ETANCHEITE S.1	03 110 A528- 1	861413 1
95	1,000	PLAQUE D'ETANCHEITE SIGMA 1	03 110 A523- 1	861421 1
96	0,150	1M TISFLON ADHESIF RLX 16.50M	181 25 L 25	791326
98	1,000	VIS CL M 4 X 10 INOX	18/10	354686
99	1,000	ECROU RAPID M 4 E2.5	NU 512-2	740993
100	2,000	COLONNETTE 3.2X 1 CYL L UZ.NI	ENLIS 2	716170
150	1,000	CABLE SECTEUR SIGMA 1	03 130 N005	856304
152	1,000	CABLE FREEZE TM/2D SIGMA 1	03 130 N003	856274
154	1,000	CABLE VIDEO SIGMA 1	03 130 N006	856312
155	1,000	NAPPE HE 5-HE10 25PTS L = 33 CM	RB 10003	845574
156	1,000	CABLE PLAT N14 SIGMA 1	03 132 N006	858846
157	1,000	CABLE PLAT N15 SIGMA 1	03 132 N007	858854
159	1,000	NAPPE HE10-HE10 26PTS L = 47 CM	RB 10001	801380
160	1,000	PCA ANREF	03 122 N001	856509
161	1,000	PCA COMPHO	03 120 N005	854786
162	1,000	PCA POLIN	03 120 N004	854751
163	1,000	CABLE SWITCH PHOTO SIGMA 1	03 130 N004	856282
164	1,000	MONITEUR L & B/CLINTON	VM 1802/KIT	410403 1
166	1,000	PCA PERIP	03 121 N006	854956
167	1,000	PCA IFDOD	03 120 N001	852724
168	4,000	RONDELLE A DENT DD 3 I.MO	18/12 MO	407712 1
169	1,000	PCA SCON 2 SIGMA 1	03 121 N009	861286 1
170	1,000	PCA MEMEX SIGMA 1	03 121 N002	852848

Etabli: Diakite	SIGMA 1 EQUIPE.CHASSIS SIGMA 1 ANGLAIS 862835 Repères topologiques		
Date: 31/07/92		03 110 N560	011
Vérifié: 		FEUILLE 2 sur 4FEUILLES	Edi. De

Repères	Quantité	DESIGNATION	Reference	Article
171	1,000	PCA FIST	03 121 N003	852864
173	1,000	PCA CARDIS	03 121 N005	852929
174	2,000	CABLE PLAT DE RACCORDEMENT	50 002 N005	837059
175	1,000	CABLE PLAT N4 SIGMA 1	03 132 N002	858781
176	1,000	CABLE PLAT N6 SIGMA 1	03 132 N003	858803
177	1,000	CABLE PLAT N10 SIGMA 1	03 132 N004	858811
179	1,000	NAPPE HE10-HE10 40PTS L= 22 CM	RB 10001	845582
181	1,000	CABLE PLAT N°188 AA	03 132 N014	884561 1
182	1,000	CABLE PLAT N18D SIGMA 1	03 132 N010	858897 1
183	1,000	CABLE PLAT N18A SIGMA 1	03 132 N008	858862 1
184	1,000	FIL DE MASSE SIGMA 1	03 130 N013	866997 1
185	2,000	CLIP FAST 2,8 ROUG.SERT.S 1,6	140822-1	537160
186	0,030	GAINE RETRACT. INCOL.D 4,8 MM	RNF-100 T2 3/16	796956
187	0,200	FIL ISOLE SOUP.ROUGE 0,34MM2	KY 30-05	525367
188	0,200	FIL ISOLE SOUP.BLEU 0,34MM2	KY 30-05	525340
189	2,000	LANG.FAST.6,35 EP. VISS. D 3,2	101	866644 1
190	1,000	VIS CL M2,5X 6 INOX	18/10	545341
191	1,000	RONDELLE CONTACT M 3 CD.BI	55 03 11 24	741647
192	1,000	ECROU HU M2,5 INOX	18/10	544825
193	6,000	VIS CL M 4 X 6 INOX	18/10	579351
195	1,000	FIL DE MASSE CAPOT SIGMA 1	03 130 N015	875287 1
197	1,000	ECLAIR TENSION DANGEREU. 12X24	308-002	850004
201	2,000	CHARNIERE CLAVIER SIGMA1 PEINT	03 151 A502TV	858382
202	1,000	CACHE CABLE CLAVIER SIGMA 1 AA	03 151 B512- 2	884413 1
203	1,000	CACHE CONNECTEUR CLAVIER S.1AA	03 151 B513- 1	884421 1
205	1,000	TRACBALL (GLOSSY BALL) SP 5441	LQ 200-192-5	855529
206	1,000	BRIDE BOUTON VERROU SIGMA 1	03 105 A506- 1	858013
207	1,000	BOUTON DE VERROUILLAGE SIGMA 1	03 105 B503TV	857092
208	1,000	BOITIER CLAVIER SIGMA 1	03 105 C502TV	857084
209	1,000	SOCLE SIGMA 1 PEINT	03 105 D501TV	857998
210	2,000	BUTEE DE CLAVIER SIGMA 1	03 151 A505- 1	860158 1
211	1,000	AXE CLAVIER SIGMA 1	03 105 A505- 1	858005
212	2,000	REHAUSSE BOUTON VERROUILL.SIG1	03 105 A508- 1	420034 1
213	1,000	DECOR POIGNEE SIGMA 1	03 150 A511- 2	860131 1
214	1,000	ETIQUETTE VERSION ADHESIVE	SP680019- 1	861006 1
217	1,000	IDENTIFIC. N° DE SERIE ET CODE	SP680031- 1	875333 1
250	2,000	PIED BASCULANT PLASTIQUE NOIR	10603-025	859699 1
251	2,000	PIED FIXE NOIR	10603-026	859680 1
252	2,000	VIS C POZ.M 4 X 16 CH.NOI	TCAR POZI.CH.NO	861715 1
253	1,000	COLONNETTE M3 X10 HEX T CD.BI	ENMET 6	716758
254	8,000	VIS TC POZIDRIV D=2 L=15 NK	PLASTITE N-2	848727
255	4,000	RIVET A CLOU 3,2X 6,5 AL/AC	21306303065	504572
256	2,000	1 CONTACT EN BANDE DE 64ADHES	97520A- 3.3X9,4	598895
257	2,000	VIS TC POZIDRIV D=4,4 L=12 AZ	PLASTITE N-8	859974 1
258	1,000	CABOCHON INDICATEUR VERT	FA101	855901
259	2,000	RESSORT COMP. 1 DE5,6 X12,5	TI-3.2X5,6X12,5	862029 1
263	8,000	VIS C POZIDRIV M 3 X 6 CH.NOI	TCAR POZI.CH.NO	861634 1
264	4,000	VIS TC POZIDRIV D=3,4 L=10 AZ	PLASTITE N-5	859966 1
265	3,000	VIS BHC 2,84X1/4 AC.NOI		861553 1
266	2,000	VELCRO CLAVIER SIGMA 1	03 151 A518- 1	420026 1
267	2,000	VELCRO BOITIER CLAVIER SIGMA 1	03 151 A517- 1	420018 1
268	1,000	ATTACHE CABLE CLIP.11X5,6	WS-1RA	861790 1
BR1	1,000	ECROU A OREILLES M5 UZ NI		866202 1
BR1	1,000	ECROU HU BAS M5 UZ NI		866229 1
BR1	1,000	RONDELLE PLATE LU 5 UZ NI		866237 1

Etabli:	SIGMA 1 EQUIPE.CHASSIS SIGMA 1 ANGLAIS 862835 Repères topologiques		
Date:			
31/07/92		03 110 N560	011
Vérifié:		FEUILLE 3 sur 4FEUILLES	Edi. Da

Repères	Quantité	DESIGNATION	Référence	Artic
BR1	1,000	VIS CL M 5 X 25 UZ NI		866245
BR2	1,000	BORNE D'EQUIPOTENTIALITE D6	POAG-S6/15	857351
F1	1,000	FUSIBLE 5 X20 1,6 A RETARD.	23901,6	411019
F1	1,000	PORTE FUSIBLE 5 X20	8843-902	860085
F2	1,000	FUSIBLE 5 X20 1,6 A RETARD.	23901,6	411019
F2	1,000	PORTE FUSIBLE 5 X20	8843-902	860085
VL1	1,000	VENTILATEUR 120X38 44L/S 12VCC	4312	861782

Etabli: Diakite	SIGMA 1 EQUIPE.CHASSIS SIGMA 1 ANGLAIS 862835 Repères topologiques	 KONTRON INSTRUMENTS	
Date: 31/07/92			
Vérifié: 		03 110 N560	011
		FEUILLE 4 sur 4 FEUILLES	Edi. D

[illegible]

[illegible]

LEGEND

DATE

05.88

PEOPLE

210000 1

Abstract

[illegible]

NOTES

-05 126 7001

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

REPERE	QUANTITE	DESIGNATION	REFERENCE	ARTICLE
CR01	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR02	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR03	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR04	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR05	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR06	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR07	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR08	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR09	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR10	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR11	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR12	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR13	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR14	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
CR15	1,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
C01	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C02	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C03	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C04	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C05	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C06	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C07	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C08	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C09	1,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C10	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C11	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C12	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C13	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C14	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C15	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C16	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C17	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C18	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C19	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C20	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C21	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
C22	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C23	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C24	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C25	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C26	1,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C27	1,000	COND.TANT.G 22 UF P 5,08 35V	TAP	709670
C28	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
3A	1,000	EMBASE HE13 AU F 2X17PTS CI C	310-34-2-L0-2	876526
4A	1,000	EMBASE HE13 AU F 2X17PTS CI C	310-34-2-L0-2	876526
5	1,000	EMBASE HE13 AU M 2X13PTS CI D	320-26-2-Y0-2	865761
6	1,000	EMBASE HE13 AU M 1X08PTS CI D	320.08-1-Y0-2	865745
7	1,000	EMBASE HE13 AU M 2X13PTS CI D	320-26-2-Y0-2	865761
1-4	4,000	SELF N.B 47UH 5% 2RS 193MA	1537-60 L10D 4	595935
5-7	3,000	SELF N.B 100UH10% 8K 84MA	1025-68 L7D2,5	579998

ETABLI

LEGER

DATE

1.02.88

VERIFIE

+PCA RELAY

872156

KONTRON

03 1.0 N002

+ 1 + 02/88

CE DOCUMENT EST LA PROPRIETE DE KONTRON ET NE PEUT ETRE REPRODUIT

NO COMMUNIQUER SANS AVOIR

ETABLI	+	+	KONTRON
LEGER	+	SIGMA 1	
DATE	+		
3.02.88	+	PCA RELAY	
VERIFIE	+		
	+	872156	03 180 N002 1 02/88

+REFERE	+QUANTITE	+DESIGNATION	+REFERENCE	+ARTICLE
P	2,000	REPÈRE OVALGRIP -P-D 1,4-2,3MM	H030-P-ROSE	779342
01	1,000	GUIDE CABLE D:7,5 COTE PRISE	50 004 A511	853887
02	2,000	MANCHON POLYURETHANE	15 164	853917
03	1,000	PASSE FIL ETANCHE D11A14	3220-GRIS+ECROU	866318
04	1,000	CONTRE ECROU POUR RACCORD 3220	E3220	866695
05	1,000	REPÈRE OVALGRIP -5-D 1,4-2,3MM	H030-5-VERT	779253
06	1,000	PCA TIC 1	03 172 N002	873934
07	1,000	REPÈRE OVALGRIP -7-D 1,4-2,3MM	H030-7-VIOLET	779288
08	1,000	PCA TIC 2	03 172 N003	873985
50	1,000	COSSE RONDE 2,6 NUE OEIL L 9	399	842613
51	1,000	VIS CL M 2 X 16 INOX	18/10	545333
52	1,000	RONDELLE A DENT DE 2 INOX	18/10	544582
53	1,000	ECROU HU M 2 INOX	18/10	544817
150	1,200	CABLE 14COND+22PAIRES AWG 36	SF620001	853941
151	1,000	CAPOT PROTECTEUR 90PTS POUR 816	816 M034	834203
152	1,000	BOITIER FICHE 90PTS MD.701	816 90X940-701	834173
153	1,000	CAPOT NOIR 816 90PTS 45 ZAMAC	816 S113	834181
154	2,000	BOITIER HE14 2X13PTS V	310-26-2-X0	855456
155	56,000	DOUILLE HE13 AU SERT.0,08A0,6	310C219	865613
156	59,000	DOUILLE/M.PV AU SERT.0,02A0,04	75543-001	853933
157	0,770	TUYAU SOUPLE 1,2X 2 PVC CRI	RAUMEDIC 039530	836079
158	0,160	TUYAU SILASTIC 0,078X0,125" 3%		729361
159	0,160	GAINÉ RETRACT. BLANC.D 2,4 MM	SFM-24	717665
160	4,000	MANCHON NEOPR.JAUNE L 25 D 3	100H30	797197
161	1,000	MANCHON NEOPR JAUNE L 20 D 7,5	100H75	750344
162	0,200	GAINÉ TRESSEE GRISE D 6 MM	RILG-1006-8	717770
163	0,070	GAINÉ RETRACT. BLANC.D 1,2 MM	SFM-12	717622
164	1,020	GAINÉ RETRACT. INCOL.D 2,4 MM	RNF-100 T2 3/32	750999
165	1,000	BOITIER MINI PV 2X08PTS 2,54 V	65043-029	723908
166	0,250	BOITIER MINI PV 1X36PTS 2,54	65039 001	575224
167	9,000	DOUILLE/M.PV AU SERT.0,5 A 0,8	47712-001	737887
168	1,000	BOITIER MINI PV 2X05PTS 2,54	65043 32	598445
169	43,000	CONTACT H 816AU WRAP 0,61X0,59	W4 816C108	834238
170	9,000	CONTACT H 816AU SERT.0,05 0,6	X816 C102	834211
171	10,000	CONTACT H 816AU BAND 0,01A0,05	816C119	869368
172	3,000	COLLIER L 2,6MM DMAX 16 MM	T23R	504440

ETABLI
BOINO
DATE
3.02.88
VERIFIE

SIGMA 1

+CABLE CAPTEUR COM AA

882259

KONTRON

+ 03 172 N005 + 1 + 02/88

Repères	Quantité	DESIGNATION	Reference	Article
50	16,000	VIS C M2.5X 10 INOX	18/10	354279
51	8,000	RONDELLE OND.M2.5D5E0.3 UBE2	52 02 51 70 3	402648
52	8,000	COLONNETTE M2.5X16 HEX T CD-BI	MODELE 3	832502
55	7,000	RONDELLE PLATE MU 3 NYLON		546062
151	0,140	TRESSE TUB.CU 5/100 ETA D 4		866385
152	1,000	CLIP FAST 6.35 BLEU.SERT S 2.5	140963-1	537187
153	0,070	GAINÉ RETRACT. BLANC.D 2.4 MM	SFM-24	717665
154	1,000	CLIP FAST 2.8 ROUG.SERT.S 1.6	140822-1	537160
155	0,150	FIL ISOLE SOUP.NOIR 1.34MM2	KY 33A-05	579203
99999	1,000	PCB 1 COM. WOB.	03 175 8201-C	863637
CR1 à CR12	12,000	DIODE SCH. 60V 15MA 0.4W D035	1N6263	549495
J1	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165
J1	39,000	CONTACT H 816AU WRAP 0.61X0.59	816C108	834238
J2	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165
J2	39,000	CONTACT H 816AU WRAP 0.61X0.59	816C108	834238
J3	0,730	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348
J4	0,730	BARRETTE D 1X36PTS CI/W 2.54	75160-102-36	598348
S1	1,000	COMMUTATEUR MIL 4 MODULES	SP640015- 1	863696

Etabli:
Biemmi

Date:
27/07/90

SIGMA 1

PCA 1 COM. WOB.
863637



KONTRON
INSTRUMENTS

Repères	Quantité	DESIGNATION	Référence	Article
150	1,000	LANG.FAST 2.8 DOUBLE CID	E208/5	869627
999999	1,000	PCB 2 COM. WOB.	03 175 B202-C	863653
C1	1,000	COND.FILM R 100 NF20% 63 VDC	MKT1817 P 5	812218
CR13 à CR16	4,000	DIODE COM. 74V 10MA 4NS D035	1N4148	512044
J5	1,000	EMBASE HE13 F 2X13PTS CI C	310-26-2-LO-2	865753
J6	1,000	EMBASE HE13 F 2X13PTS CI C	310-26-2-LO-2	865753
J7	1,000	EMBASE HE13 VER M 2X13PTS CI D	320-26-2-YO-2	865761
J8	1,000	EMBASE HE13 VER M 2X13PTS CI D	320-26-2-YO-2	865761
J9	1,000	EMBASE HE13 VER M 1X08PTS CI D	320.08-1-YO-2	865745
K1 à K4	4,000	RELAIS REED 5DC 2RT 3VA DIL	B2W4.3-5V60L10	859672

Etabli:
Biemmi

Date:
05/06/90

Vérifié:

SIGMA 1


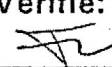
PCA 2 COM. WOB.
863645



KONTRON
INSTRUMENTS

03 175 N002 003

Repères	Quantité	DESIGNATION	Référence	Article
50	8,000	VIS C M2.5X 16 INOX	18/10	794562
51	8,000	RONDELLE PLATE MU 2,5 INOX	18/10	544701
52	8,000	COLONNETTE 3.2X 5 CYL L UZ.NI	ENLIS 2	716200
53	8,000	ECROU HU M2,5 INOX	18/10	544825
54	8,000	RONDELLE A DENT DE 2,5 INOX	18/10	355232
150	0,080	GAINE RETRACT. BLANC.D 3,2 MM	SFM-32	717681
151	1,000	CLIP FAST 6.35 BLEU.SERT S 2,5	140963-1	537187
152	0,080	TRESSE TUB.CU 5/100 ETA D 4		866385
153	0,400	FIL ISOLE SOUP.NOIR 1,34MM2	KY 33A-05	579203
154	2,000	CLIP FAST 2,8 ROUG.SERT.S 1,6	140822-1	537160
99999	1,000	PCB 1 COM. LIN. SIGMA 1	03 175 8203-B	863831
C1 à C2	2,000	COND.CERA.R 22 NF-20+80 63 V	629 08 223-P2,5	511056
C3 à C5	3,000	COND.CERA.R 10 NF-20+80 63 V	629 08 103-P2,5	511005
C6	1,000	COND.ELEC.D 47UF P 5 100V	SEM2A470 D10H16	578797
CR2	1,000	LED VERTE SUR SUPPORT P 2,54	561-2201-100	866717
CR3	1,000	DIODE ZEN. 12V 5% 0,5W DO35	BZX55 C12	817163
CR4	1,000	LED JAUNE SUR SUPPORT P 2,54	561-2301-100	866709
CR5	1,000	DIODE ZEN. 12V 5% 0,5W DO35	BZX55 C12	817163
J1	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165
J1	56,000	CONTACT H 816AU WRAP 0,61X0,59	816C108	834238
J2	1,000	BOITIER EMBASE 90PTS MO.707	816 90X941	834165
J2	56,000	CONTACT H 816AU WRAP 0,61X0,59	816C108	834238
J3	0,730	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
J4	0,730	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
J5	1,000	EMBASE HE13 VER M 2X13PTS CI D	320-26-2-YO-2	865761
J6	0,730	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
J7	0,730	BARRETTE D 1X36PTS CI/W 2,54	75160-102-36	598348
Q1 à Q2	2,000	TRAN.NMOS 90V 2A 0,5W TO39	VN 90 AB	825832
Q12	2,000	INTERCALAIRE TO 5 H 3	DE 006	537101
R1	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R2 à R3	2,000	RES.COUC 2,7 KOHMS 5% 1/4W	CR 25	510459
R4 à R5	2,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
R6	1,000	RES.COUC 8,2 KOHMS 5% 1/4W	CR 25	516198
R7	1,000	RES.COUC 1 KOHMS 5% 1/4W	CR 25	510408
Z1	1,000	AMPLI.OPER.DOUBLE BIFET DIL 8	TL082-CP	578851

Etabli: Biemmi	SIGMA 1 PCA 1 COM. LIN. SIGMA 1 863823 Repères topologiques		
Date: 31/12/90		03 175 N003	004
Vérifié: 		FEUILLE 1 sur 1FEUILLES	
Ce document est la propriété de KONTRON et ne peut être reproduit ou communiqué sans autorisation écrite			

Repères	Quantité	DESIGNATION	Référence	Article
1	1,000	PASSE FIL ETANCHE D11A14	3220-GRIS	866318
2	1,000	GUIDE CABLE D:7,5 COTE PRISE	50 004 A511	853887
3	1,000	CONTRE ECROU POUR RACCORD 3220	E3220	866695
50	1,000	VIS CL M 2 X 16 INOX	18/10	545333
51	1,000	RONDELLE A DENT DE 2 INOX	18/10	544582
52	1,000	COSSE RONDE 2,6 NUE OEIL L 9	399	842613
53	1,000	ECROU HU M 2 INOX	18/10	544817
150	3,000	BOITIER HE13/14 2X13PTS V	310-26-2-XO	855456
151	68,000	DOUILLE HE13 AU SERT.0,08A0,34	310C219	865613
152	0,800	CABLE 14COND+22PAIRES AWG 36	SP620001- 2	853941
153	1,000	CAPOT NOIR 816 90PTS 45 ZAMAC	816 S113	834181
154	1,000	BOITIER FICHE 90PTS MO.701	816 90X940	834173
155	54,000	CONTACT H 816AU BAND 0,01A0,05	816C119	869368
156	6,000	MANCHON NEOPR.JAUNE L 25 D 3	100H30	797197
157	0,400	TUYAU SOUPLE 1,2X 2 PVC CRI	RAUMEDIC 039530	836079
158	1,000	MANCHON NEOPR.JAUNE L 25 D 3	100H30	797197
159	0,450	GAINES TRESSEE GRISE D 6 MM	RILG-1006-8	717770
160	1,000	CAPOT PROTECTEUR 90PTS POUR816	816 M034	834203
161	0,560	TUYAU SILASTIC 0,078X0,125" 3%		729361
162	3,000	COLLIER L 2,6MM DMAX 16 MM	T23R	504440
163	0,100	GAINES RETRACT. BLANC.D 2,4 MM	SFM-24	717665
164	4,000	CONTACT H 816AU SERT.0,4 A0,9	816C102	834211
165	2,000	MANCHON POLYURETHANE	15 164	853917
166	68,000	DOUILLE/M.PV AU SERT.0,02A0,04	75543-001	853933
A0	1,000	REPERE OVALGRIP -A-D 2,3-3,7MM	H050-A-ROSE	792020
B0	1,000	REPERE OVALGRIP -B-D 2,3-3,7MM	H050-B-ROSE	792039

Etabli:
Rivallant

Date:
31/07/92

Vérifié:

[Signature]

SIGMA 1

CABLE CAPTEUR COM.LIN.

864161

Repères topologiques



KONTRON
INSTRUMENTS

03 175 N007

005

FEUILLE 1 sur 1FEUILLES

Edi. Da



Product Group : Ultrasound
Ref. N° : 87190 K.I.S. BM/mm
Date : October 14th, 1987
Contact : Bernard MARTIN

Sigma line Engineering Service Information N° 1

**Subject : new soft compatibility level 6 for Sigma 1 SC
Sigma 1
Sigma Doppler**

Four new softs are available :

- . 4 proms V0.4/C6 to be implemented on SCON 1 for Sigma 1 SC
- . 5 proms V1.11/C6 to be implemented on SCON 2 for Sigma 1 LIN
 Sigma 1 STAR
 Sigma 1 CLASS
- . 5 proms V3.11/C6 to be implemented on SCON 2 for Sigma 1 CARDIO
- . 5 proms V0.9/C6 to be implemented on SCON 2 for Sigma Doppler

Caution

**If Sigma Doppler is part of the system to be
upgraded, both Doppler soft and Sigma soft must
be exchanged in order to ensure compatibility.**

**Be sure you use adequate chip type when
duplicating the proms.**

Contents of this Tech Bulletin :

Page 2	How to check the soft version of the unit
Page 3	Proms exchange
Page 4	Prom types and part numbers
Page 5	Main improvements after implementing soft C6 on Sigma 1 SC
Page 6	Main improvements after implementing soft C6 on Sigma 1
Page 7	Main improvements after implementing soft C6 on Sigma Doppler

How to check the soft version implemented in the unit

Sigma 1 SC

Press the [SET] [V] touchkeys and the actual soft version appears in the right upper corner on the CRT. After implementing the new soft, the display will show :

V0.4/C6

Sigma 1

Press the [SET] [V] touchkeys. After implementing the new soft, the display will show :

V1.11/C6

for Sigma 1 CLASS
Sigma 1 STAR
Sigma 1 LIN

V3.11/C6

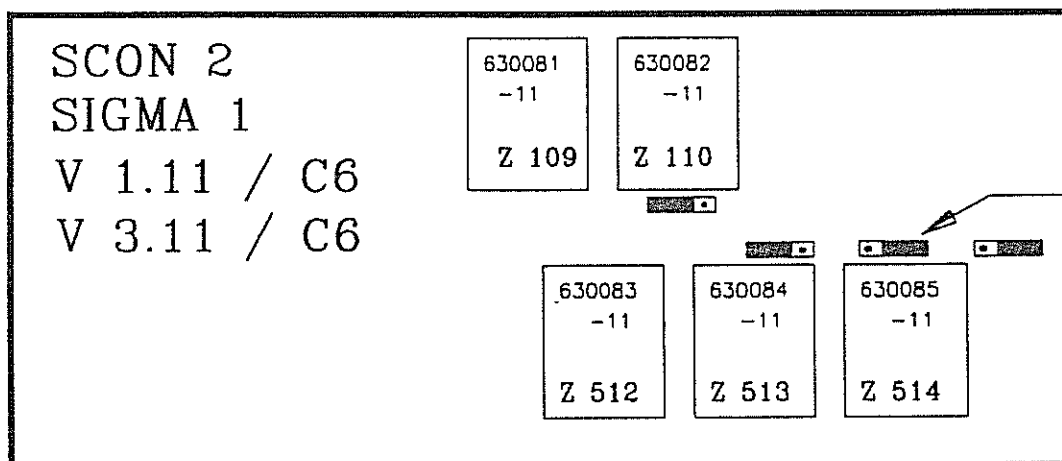
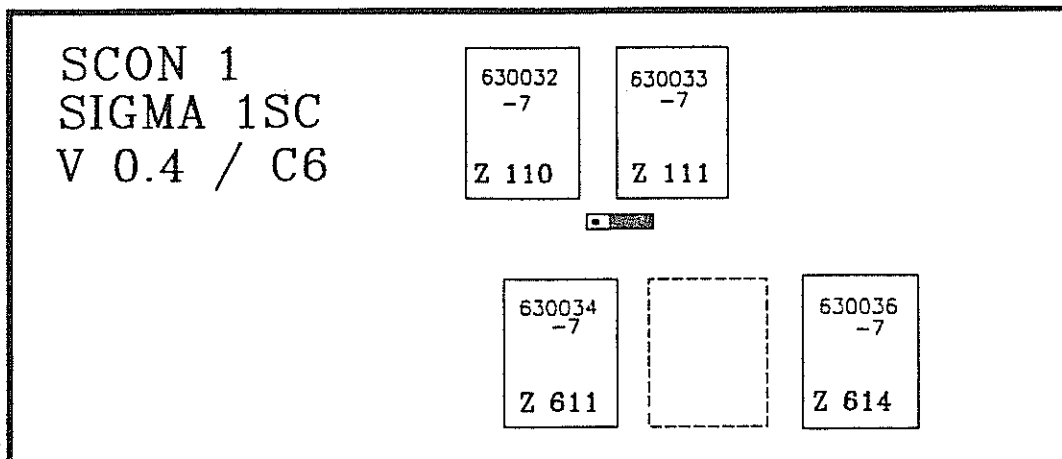
for Sigma 1 CARDIO

Sigma Doppler

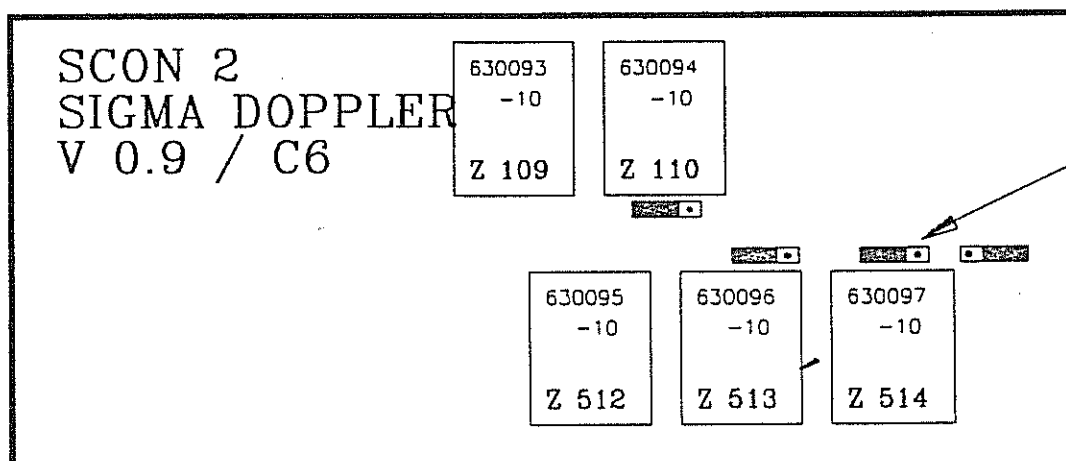
Press the [SET] [MORE] [VERSION] touchkeys. After implementing the new soft, the display will show :

V0.9/C6

Prom exchange



CAUTION : Strap inverted →



Prom types and part numbers

Unit	Prom P.N.	Specification	Location on SCON	Type description
Sigma 1 SC	858 668	630 032	Z 110	27128 K
	858 641	630 033	Z 111	27128 K
	858 633	630 034	Z 611	27128 K
	858 617	630 036	Z 614	2764-30
Sigma 1	866 903	630 082	Z 110	27128 K
	866 881	630 081	Z 109	27128 K
	866 911	630 083	Z 512	27128 K
	866 938	630 084	Z 513	27256
	866 946	630 085	Z 514	27256
Sigma Doppler	867 764	630 094	Z 110	27128 K
	867 772	630 093	Z 109	27128 K
	867 799	630 095	Z 512	27128 K
	867 802	630 096	Z 513	27128 K
	867 829	630 097	Z 514	27256 or 27C256

Main improvements after implementing soft version V0.4/C6 on Sigma 1 SC

- . New TM speeds : 25 mm/s - 50 mm/s - 100 mm/s (Instead of 10 - 25 - 50)
- . Depth markers will be displayed in TM.
- . Scanning depth 1 using 7.5 type B transducer will be 6 cm (Instead of 7.5 cm).
- . Automatic freeze delay is protracted from 5 minutes to 15 minutes.

Main improvements after implementing soft version V1.11/C6 or V3.11/C6 on Sigma 1

- . Direct access to the biometric functions by pressing [SET] [C] touchkeys.
- . New TM speeds : 25 mm/s - 50 mm/s - 100 mm/s (Instead of 10 - 25 - 50)
- . Simpson and hemi-ellipse : the systole volume and diastole volume can be computed.
- . The technical data are automatically displayed when exiting the CINE mode.
- . Set up programs : the filters automatically selected are changed :

	previous soft version or V1.10 C5 V3.10 C5	new soft version or V1.11/C6 V3.11/C6
<hr/>		
Sector :		
SET 2	F3	F1
<hr/>		
Linear :		
SET 1	F2	F1
SET 2	F3	F1
<hr/>		

Main improvements after implementing soft version V0.9/C6 on Sigma Doppler

- VECTOR : Maximum vector angle is 70° (Instead of 45° max).
- TM : An additional speed of 100 mm/s is added.
- BIOMETRY : New TM measurements are implemented :
DIST
RATIO
SLOPE
TEICHHOLZ
- BIOHELP : During a Doppler measurement function, a text used to help the operator is displayed on the screen : [SET] + [MORE] + [BIO-HELP] + [ON] .
- CLEAR : Enables the user to erase a Doppler biometry curve.
- GATE : Between two measurements, the Doppler gate position can be modified by using the [TRACKBALL] by pressing [DEFREEZE]. The gate position can also be modified in Magnifier mode by using the [TRACKBALL] after pressing the [POS TM] touchkey on Sigma 1.
- 2D : measurements on 2D picture are possible.
- 2D and TM REFRESH : The 2D or TM picture on the Sigma 1 screen can be refreshed during Doppler examination : [SET] function ([SET] + [2D REFR] + [ON]).

Product Group : Ultrasounds
Ref. N° : 87203 K.I.S. BM/mm
Date : October 14th, 1987
Contact : Bernard MARTIN

Sigma 1 & Sigma Doppler
Engineering Service Information N° 2

Problem : Unit self resets while operating without any apparent reason, on units equipped with the C6 level soft version.

Modification : Cut pin 11 of Z511 (LS373). Connect this pin (using a short wire) with pin 13 of Z405 (LS02).

Priority code : 3
The modification may apply only if the problem actually appears on installed units. According to our experience, this problem should occur very rarely, assumed that the C6 soft version is implemented.

Attn.: _____

Product Group : Imaging
Ref. N° : 87259 K.I.S. BM/mm
Date : December 15th, 1987
Contact : Bernard MARTIN

Sigma 1

Engineering Service Information N° 3

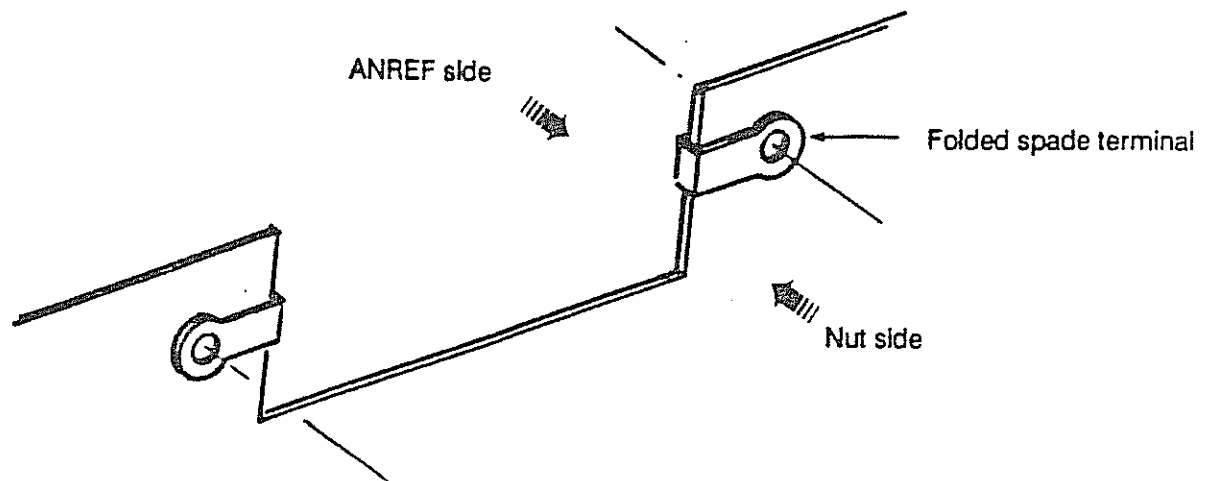
Problem	Unusual noise in the sector image or in the linear image (especially if using 5 MHz linear transducer).
----------------	---

Cause	The surface of ANREF shielding (between logic box and analog box) has lightly become corroded, and therefore avoids perfect grounding.
--------------	--

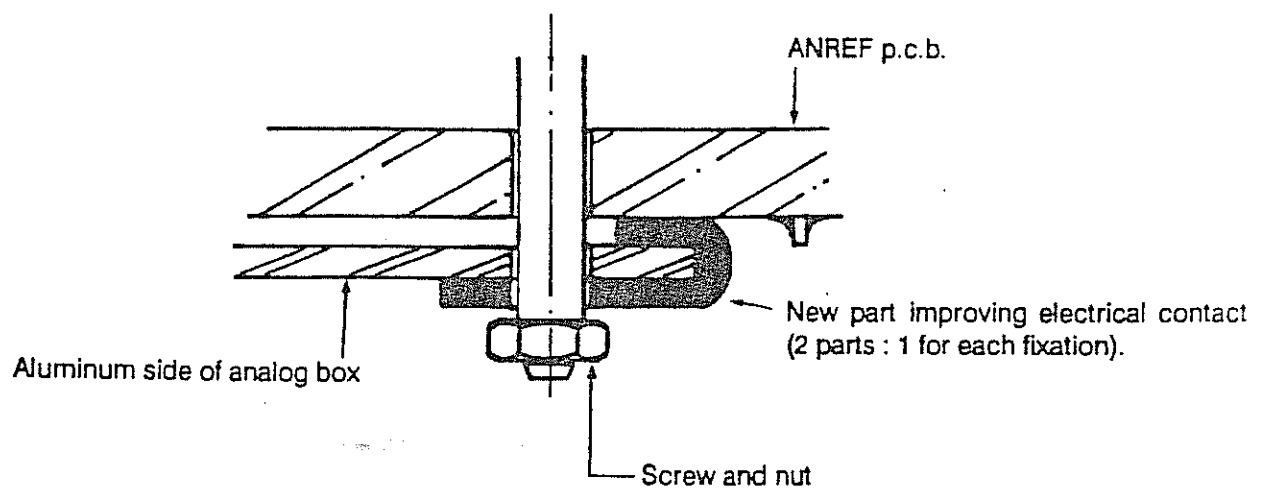
Solution	See page 2 of 2
-----------------	-----------------

Modification	Priority code is : 3 This modification must be performed on units when described problem occurs, or if a unit is at hand for repair or during preventive maintenance.
---------------------	--

Ordering information	Requested part (folded spade terminal - ref.: 842 613) is available f.o.c. on request to myself.
-----------------------------	--



- 1° Remove the ANREF p.c.a.
- 2° Clamp the two contact parts.
- 3° Clean ANREF and both sides of aluminum with alcohol.
- 4° Remount ANREF and screw the two nuts.



Product Group : Imaging
Ref. N° : Sigma Line - E.S.I. N° 4
Date : April 18th, 1988
Contact : Bernard MARTIN

Sigma Line

Engineering Service Information N° 4

Subject : updated software for Sigma 1, Sigma 1 AC

Seven new softs are available :

. 5 proms	V1.12/C6	for Sigma 1 LIN for Sigma 1 STAR for Sigma 1 CLASS
. 5 proms	V3.12/C6	for Sigma 1 CARDIO
. 5 proms	VS1.12/C6	for Sigma 1 AC STAR for Sigma 1 AC CLASS
. 5 proms	VS3.12/C6	for Sigma 1 AC CARDIO
. 5 proms	VA1.1/C6	for Sigma 1 AA STAR
. 5 proms	VA3.1/C6	for Sigma 1 AA CARDIO
. 5 proms	V0.11/C6	for Sigma DOPPLER

Caution

This Technical News Letter does not concern Sigma 1 SC. There are no changes regarding its compatibility level (C6).

Make sure that you use correct chip type when duplicating the proms.

One set of proms will be despatched f.o.c. to each country on written request (telex to B. Martin), mentioning the desired software version(s).

Contents of this Technical News Letter :

Page 2	How to check the software version of the unit
Page 3	Proms exchange
Page 4	Prom types and part numbers
Page 5	Main improvements after implementing software C6 on Sigma 1, on Sigma 1 AC, on Sigma 1 AA, and on Sigma Doppler

How to check the soft version implemented in the unit

Sigma 1

Press the **SET** **V** touchkeys and the actual software version appears in the right corner on the CRT. After implementing the new software, the display will show :

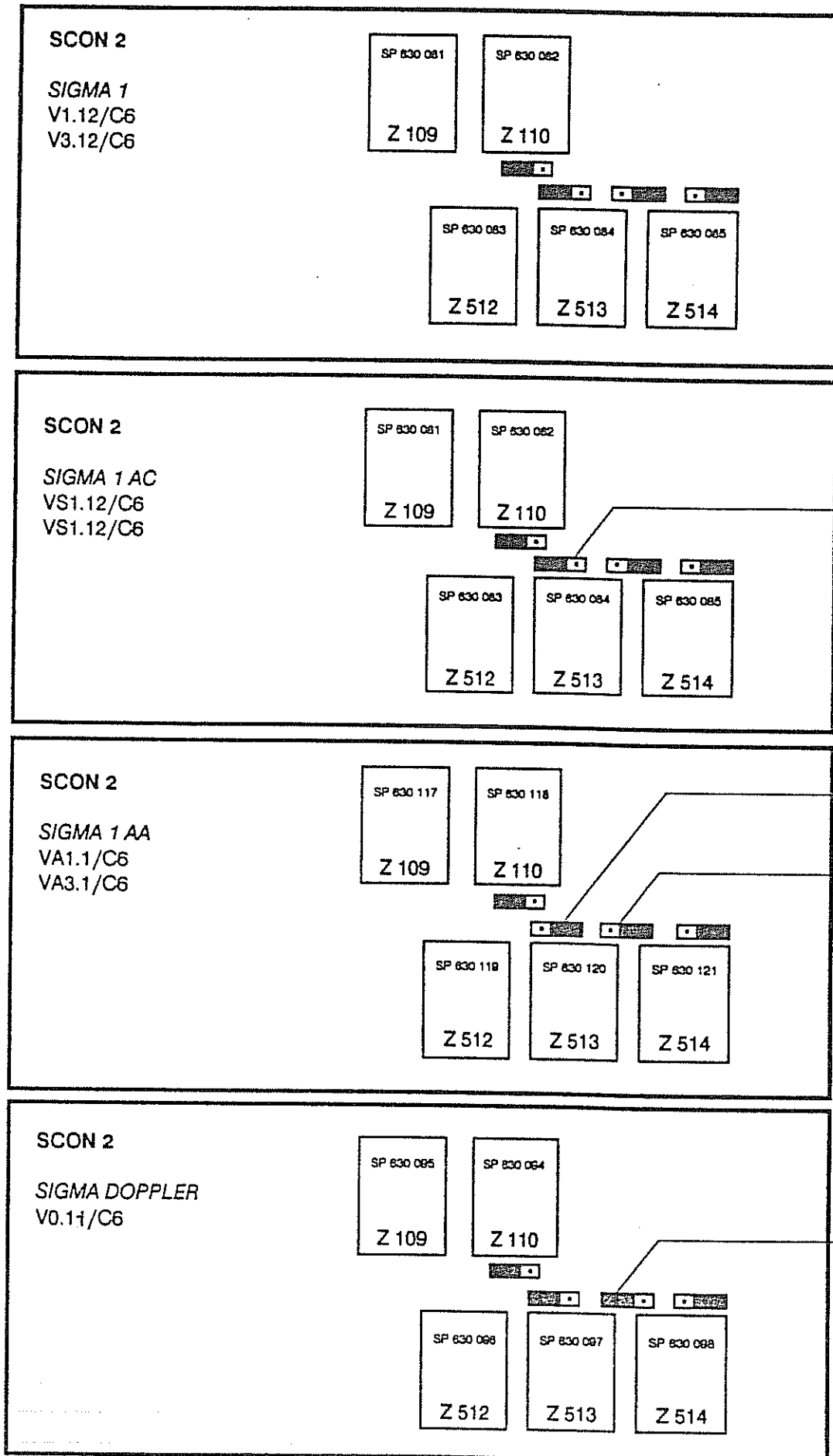
V1.12/C6	for	Sigma 1 CLASS Sigma 1 STAR Sigma 1 LIN
V3.12/C6	for	Sigma 1 CARDIO
VS1.12/C6	for	Sigma 1 AC STAC Sigma 1 AC CLASS
VS3.12/C6	for	Sigma 1 AC CARDIO
VA1.1/C6	for	Sigma 1 AA STAR Sigma 1 AA CLASS
VA3.1/C6	for	Sigma 1 AA CARDIO

Sigma Doppler

Press the **SET** **MORE** **VERSION** touchkeys. After implementing the new software, the display will show :

V0.11/C6	for	Sigma Doppler
-----------------	-----	---------------

Proms exchange



Prom types and part numbers

Updated version : November 25th, 1988

Unit	Prom P.N.	Specification	Location	Type description
Sigma 1	866 903	630 082 - 12	Z 110	27128 K
	866 881	630 081 - 12	Z 109	27128 K
	866 911	630 083 - 12	Z 512	27128 K
	866 938	630 084 - 12	Z 513	27256
	866 946	630 085 - 12	Z 514	27256
Sigma 1 AC	866 903	630 082 - 12	Z 110	27128 K
	866 881	630 081 - 12	Z 109	27128 K
	866 911	630 083 - 12	Z 512	27128 K
	866 938	630 084 - 12	Z 513	27256
	866 946	630 085 - 12	Z 514	27256
Sigma 1 AA	875 236	630 118 - 2	Z 110	27128 K
	875 228	630 117 - 2	Z 109	27128 K
	875 244	630 119 - 2	Z 512	27256
	875 252	630 120 - 2	Z 513	27256
	875 279	630 121 - 2	Z 514	27256
Sigma Doppler	867 764	630 094 - 11	Z 110	27128 K
	867 772	630 095 - 11	Z 109	27128 K
	867 799	630 096 - 11	Z 512	27128 K
	867 802	630 097 - 11	Z 513	27128 K
	867 829	630 098 - 11	Z 514	27256 or 27C256
All units actual PAL's	866 954	630 086 - 1	Z 310	16 L 8
	858 714	630 027 - 1	Z 313	16 R 4
	866 962	630 087 - 1	Z 414	16 L 8
	865 117	630 056 - 3	Z 415	16 L 8

**Main improvements after implementing software version
V1.12/C6 or V3.12/C6 on Sigma 1**

1. Compatible with keyboard controller NEC-8279.
2. This software bears a lower servo loop gain at the control circuit for the wobbler motor.

**Main improvements after implementing software version
VS1.12/C6 or VS3.12/C6 on Sigma 1 AC**

1. Device configuration recognition implemented.
2. Compatible with keyboard controller NEC-8279.
3. This software bears a lower servo loop gain at the control circuit for the wobbler motor.
4. This software does not support any annular array transducers as defined for Sigma 1 AC.

**Main improvements after implementing software version
VA1.1/C6 or VA3.1/C6 on Sigma 1 AA**

1. Device configuration recognition implemented.
2. Some new parameters for some transducers.
3. Biopsy lines are implemented for all AA-transducers.
4. Compatible with keyboard controller NEC-8279.

**Main improvements after implementing software version
V0.11/C6 on Sigma Doppler**

1. Perivascular biometry is implemented "resistance Index and pulsality index".
2. Implementation of a wall filter of 800 Hz.

Product Group : Imaging
Ref. N° : Sigma Line - E.S.I. N° 5
Date : April 18th, 1983
Contact : Bernard MARTIN

Sigma Line

Engineering Service Information N° 5

Subject The "MONITOR OUT" signal at rear panel of Sigma 1 does not properly supply all the external video devices which are connected to Sigma .

Cause The "MONITOR OUT" of the Sigma may be slightly below the standard.

Solution Refer to "video output test procedure" page 2.

Modification If the voltage level is still too low despite the check of the video output as described on page 2 of 2, please contact Bernard Martin. Detailed information will be provided afterwards.

Caution Make sure that the interconnections between Sigma and the external video devices was performed according to the instructions given in the operating manual. Check that only 75 Ohm coaxial cables are used and that the line is loaded with one 75 Ohm device input only. All other inputs must be set to high impedance (Hi Z).

Additional information This modification should be implemented only if the described problem occurs and provided the conditions mentioned under "Caution" section are met.

Priority level is 3.

Units serial numbers 4010 and higher have been modified in the factory.

**Test of the
video output**

You need : to open the machine
a 3.5 MHz cardio probe
a 75 Ohm termination
an oscilloscope

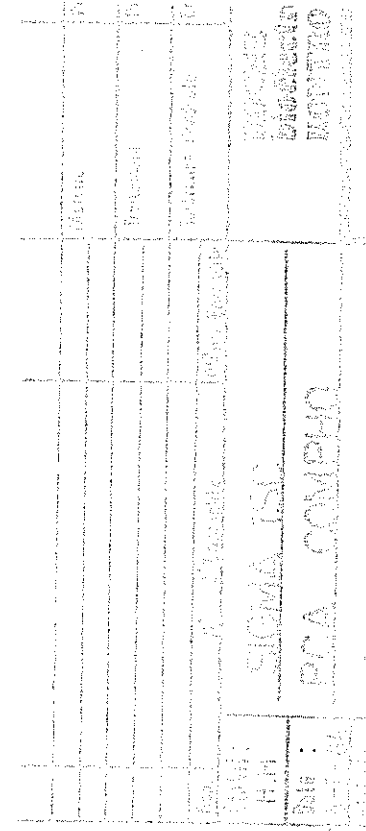
Connect a 3.5 MHz cardio transducer

Set normal image
Post 2
TGC 1, TGC 2, ... , TGC 9 min
2D Gain min
TM gain min
Reject min

Observe the video signal of the Rec Out output terminated with a 75 Ohm resistor on the scope (200 mV/div, 10 us/div)

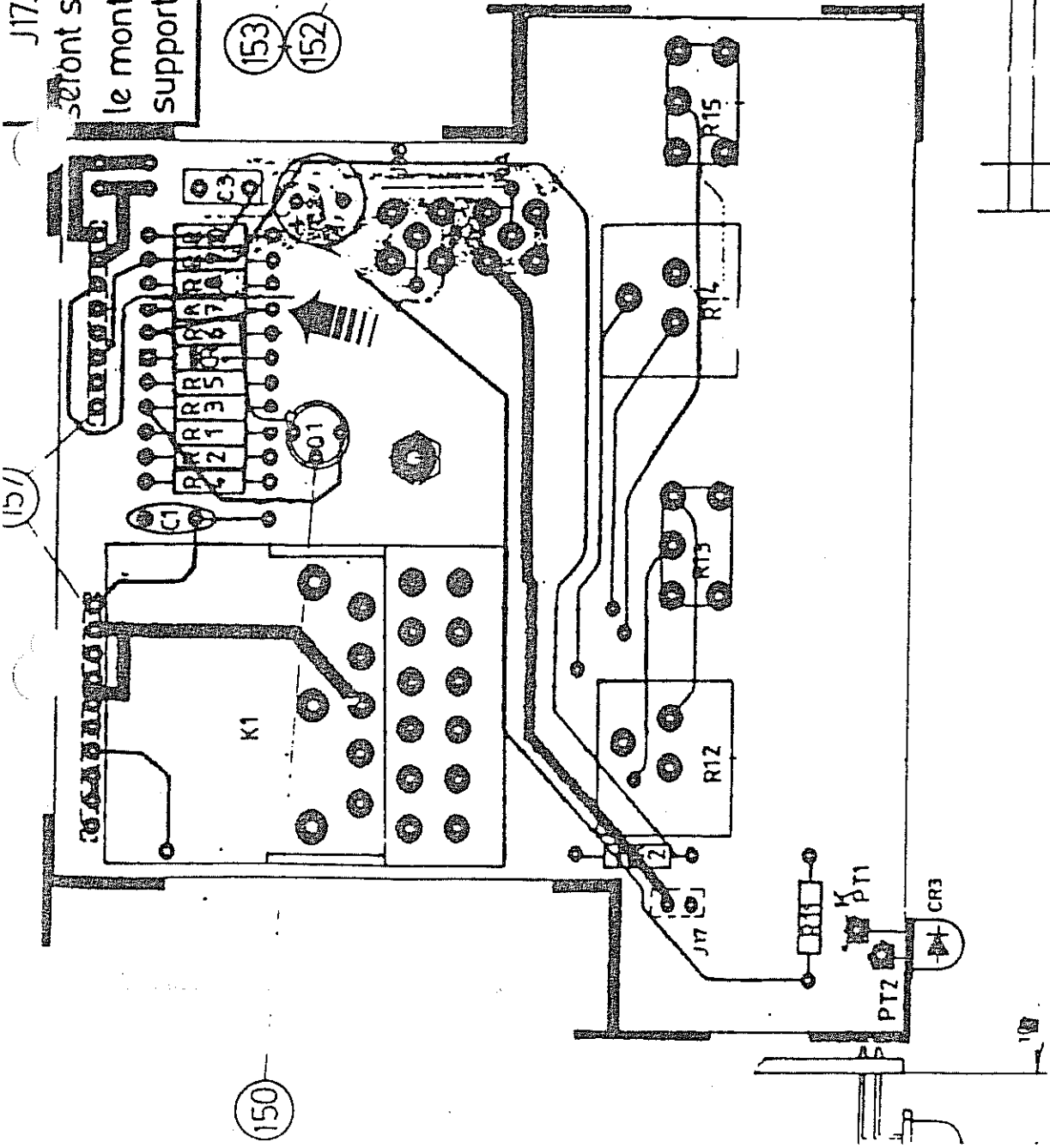
With the black porch as reference level, you should find the following voltage measurements within + 50 mV.

Overlay extra-white	710 mV
Image white for normal image	700 mV
Image white for inverse image	480 mV
Overlay white	480 mV
Image black	40 mV
Black porch	0 mV
Sync pulse	- 300 mV



R12 R13 R14 R15
seront montés sur le support (155) avant c soudés sur le c.i.

J17 J0A J0B
seront soudés avant le montage du support (155).



--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Product Group : Imaging
Ref. N° : Sigma 1 AA - E.S.I. N° 6
Date : April 18th, 1988
Contact : Bernard MARTIN

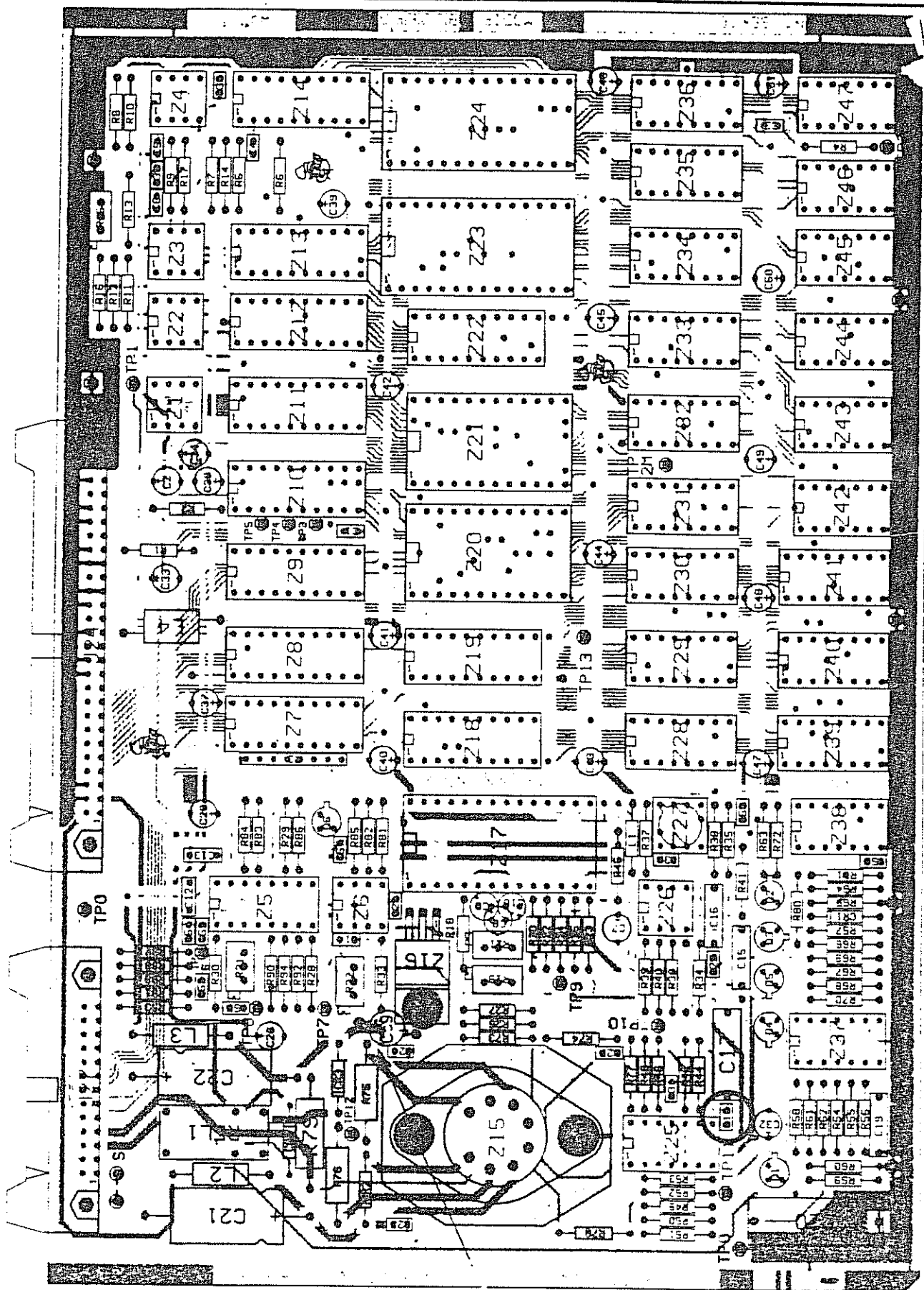
Sigma 1 AA

Engineering Service Information N° 6

Subject Oscillations of the servoloop circuit on WOMOT p.c.b. when the annular array transducer is connected to Sigma 1 AA.
You can check this by connecting a scope on TP 12 (WOMOT p.c.b.) : a triangular oscillation of several volts at 20 to 25 kHz means that the p.c.b. must be modified.

Modification Insert a 220 pF 63 V ceramic capacitor at the place of C18 (see page 2 of 2).

Additional information Priority code: 2 (AA units should be modified at earliest convenience).
Units serial numbers 4128, 4134, 4135, 4141 and higher have been modified in the factory.
In order to avoid any problems when exchanging WOMOT p.c.b., we recommend that you immediately update your spares and your service case.
The modified WOMOT p.c.b. may be inserted into a Sigma 1 SC or a Sigma 1 without any problems.



Insert and solder C18 = 220pF (P.N. : 517 097)



Product Group : Imaging
Ref. N° : Sigma Line - E.S.I. N° 7
Date : April 18th, 1988
Contact : Bernard MARTIN

Sigma Line

Engineering Service Information N° 7

Subject When scanning with the 5 MHz Annular Array transducer in 10 cm depth, a black curved line appears at approximately 4 cm depth.

Cause The switching between two adjacent focussing areas is "visible" on the CRT in this particular configuration.

Solution Insert two zener diodes BZX55C3VO as described on page 2 of 2.

Caution This E.S.I. N° 7 applies for **Annular Array units only**, and not for Sigma 1 or Sigma 1 SC units.

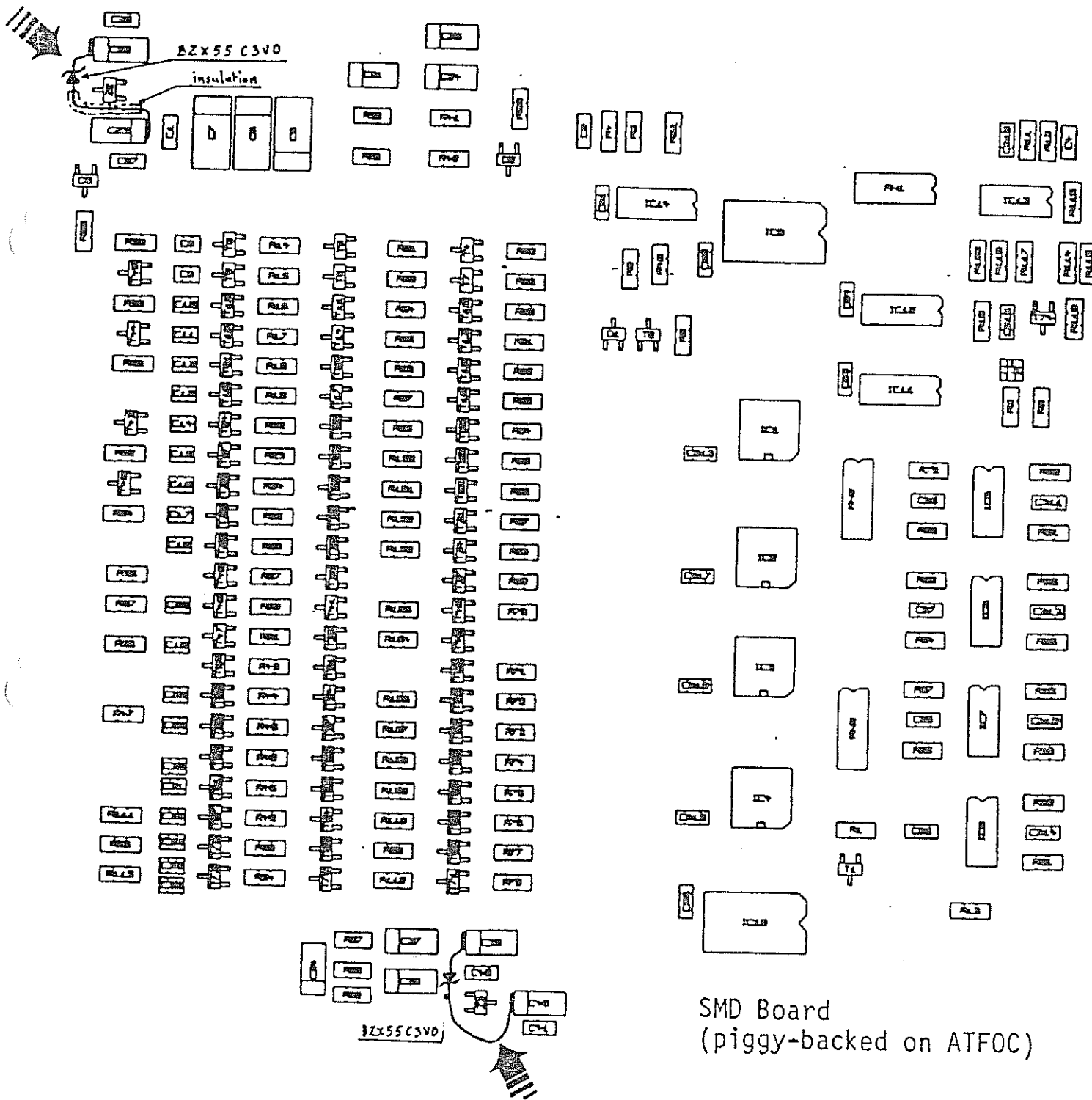
Ordering information Diode BZX55C3VO
Part number : 732 753
Quantity : 2

Additional information

- . Priority code : 3 (the modification should be implemented on customer request only).
- . Sigma 1 AA serial numbers 4067, 4068, 4070, 4073, 4075, 4079, 4118 and higher have been modified in the factory.
- . If you do not feel confident to solder the two diodes on an SMD circuit, we will exchange the ATFOC f.o.c.

Modification

This is the new page 2 of 2 of Sigma Line
E.S.I. N° 7. Please take note that this page
cancels and replaces former page 2 of 2.



Product Group : Imaging
Instrument type/model : Sigma 1 Line (AA / AC)
Ref.: N° : Sigma 1 Line - E.S.I. N° 8
Date : November 6th, 1989
Contact : Eric CASTAING

SIGMA 1 LINE (AA / AC)

Engineering Service Information N° 8

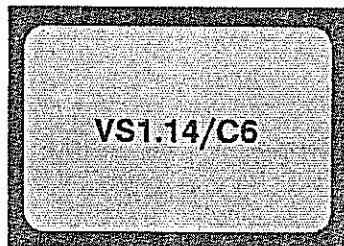
Subject	New softwares release : SIGMA 1 AC LS (Class) - LSC (Class +) ____ VS 1.14/C6 SIGMA 1 AC CARDIO ____ VS 3.14/C6 SIGMA 1 AA LS - LSC ____ VA 1.3/C6 SIGMA 1 AA CARDIO ____ VA 3.3/C6
Improvements	<u>Transrectal Multiplane transducer compatibility :</u> - Stable at 0° / TM mode. - Right hand biopsy line - 105° / 211 beams image format. <u>Biopsy lines optimization :</u> - New biopsy line for AA 3.5 MHz and AA 5.0 MHz transducers. - Improvement of biopsy line for vaginal transducers. <u>Various improvements :</u> - Correction of "Distance/Ratio measurement in TM" bug, which used to lock the printer. - Correction of speed bug in TM.
Ordering information	One set of Proms will be shipped f.o.c. to each Kontron Company upon written request sent for the attention of Eric Castaing. Please, mention each needed version.
Additional information	Priority code is 3 : this modification should be implemented if a unit is at hand for repair or during a maintenance visit. You can check the E.S.I. level N° 8 on the label under the keyboard of your unit.

Kontron Instruments S.A.
2, Avenue de Manet - Montigny le Bretonneux
Boite Postale 81
78185 Saint Quentin en Yvelines Cedex
France

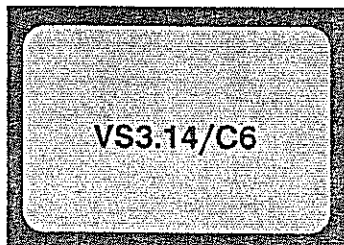
Tel : 33 (1) 30 43 81 52
Tlx : 698801 or 698802
Fax : 33 (1) 30 43 81 87

Softwares version check

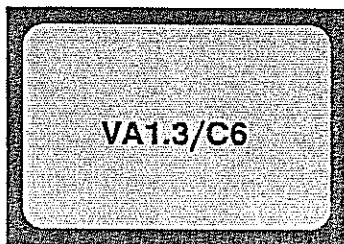
Press the **SET** and **V** touchkeys and check that the display shows after installation :



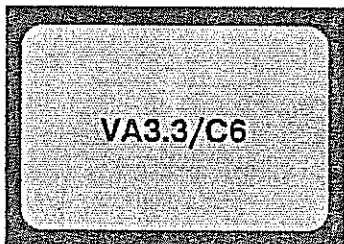
For Sigma 1 AC LS - LSC



For Sigma 1 AC CARDIO



For Sigma 1 AA LS - LSC



For Sigma 1 AA CARDIO

Modification

1. Untighten the 6 locking screws on the base plate of Sigma 1 and disconnect the earth link between the frame and the top cover. Only then, remove the top cover.
2. Remove the metal cover of the left hand electronic box.
3. Remove all the ribbon and coaxial cables on the first three left hand pcb's.
4. Take SCON 2/MEMEX pcb's assy out of the box.
5. Exchange the proms on SCON 2 pcb (see locations on drawing page 4).
6. Perform re-assembly (from 5 to 1).
7. Check the unit performances.

Caution

This E.S.I. does not apply to SIGMA 1 SC.

Prom types and part numbers

Note : access time must be at least 200 ns.

VS 1.14/C6 software (set of 5 proms) for SIGMA 1 AC LS - LSC complete description				
Prom P.N.	Location	Specification	Checksum	Prom type
866 881	Z 109	630 081 -14	AA8D	27128
866 903	Z 110	630 082 -14	FBA0	27128
866 911	Z 512	630 083 -14	9C67	27128
866 938	Z 513	630 084 -14	8479	27256
866 946	Z 514	630 085 -14	8F3F	27256

VS 3.14/C6 software (set of 5 proms) for SIGMA 1 AC Cardio complete description				
Prom P.N.	Location	Specification	Checksum	Prom type
866 881	Z 109	630 081 -14	AA8D	27128
866 903	Z 110	630 082C -14	FBA1	27128
866 911	Z 512	630 083 -14	9C67	27128
866 938	Z 513	630 084 -14	8479	27256
866 946	Z 514	630 085 -14	8F3F	27256

VA 1.3/C6 software (set of 5 proms) for SIGMA 1 AA LS - LSC complete description				
Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	630 117 - 3	AA8D	27128
875 236	Z 110	630 118 - 3	D51C	27128
875 244	Z 512	630 119 - 3	ACB4	27256
875 252	Z 513	630 120 - 3	48F2	27256
875 279	Z 514	630 121 - 3	2F1F	27256

VA 3.14/C6 software (set of 5 proms) for SIGMA 1 AA Cardio complete description				
Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	630 117 - 3	AA8D	27128
875 236	Z 110	630 118C - 3	D51D	27128
875 244	Z 512	630 119 - 3	ACB4	27256
875 252	Z 513	630 120 - 3	48F2	27256
875 279	Z 514	630 121 - 3	2F1F	27256

SCON 2 pcb

SIGMA 1 AC

SP 630 081 - 14

27128

Z 109

SP 630 082 - 14

27128

Z 110



SP 630 083 - 14

27128

Z 512

SP 630 084 - 14

27256

Z 513

SP 630 085 - 14

27256

Z 514

SCON 2 pcb

SIGMA 1 AA

SP 630 117 - 3

27128

Z 109

SP 630 118 - 3

27128

Z 110



SP 630 119 - 3

27256

Z 512

SP 630 120 - 3

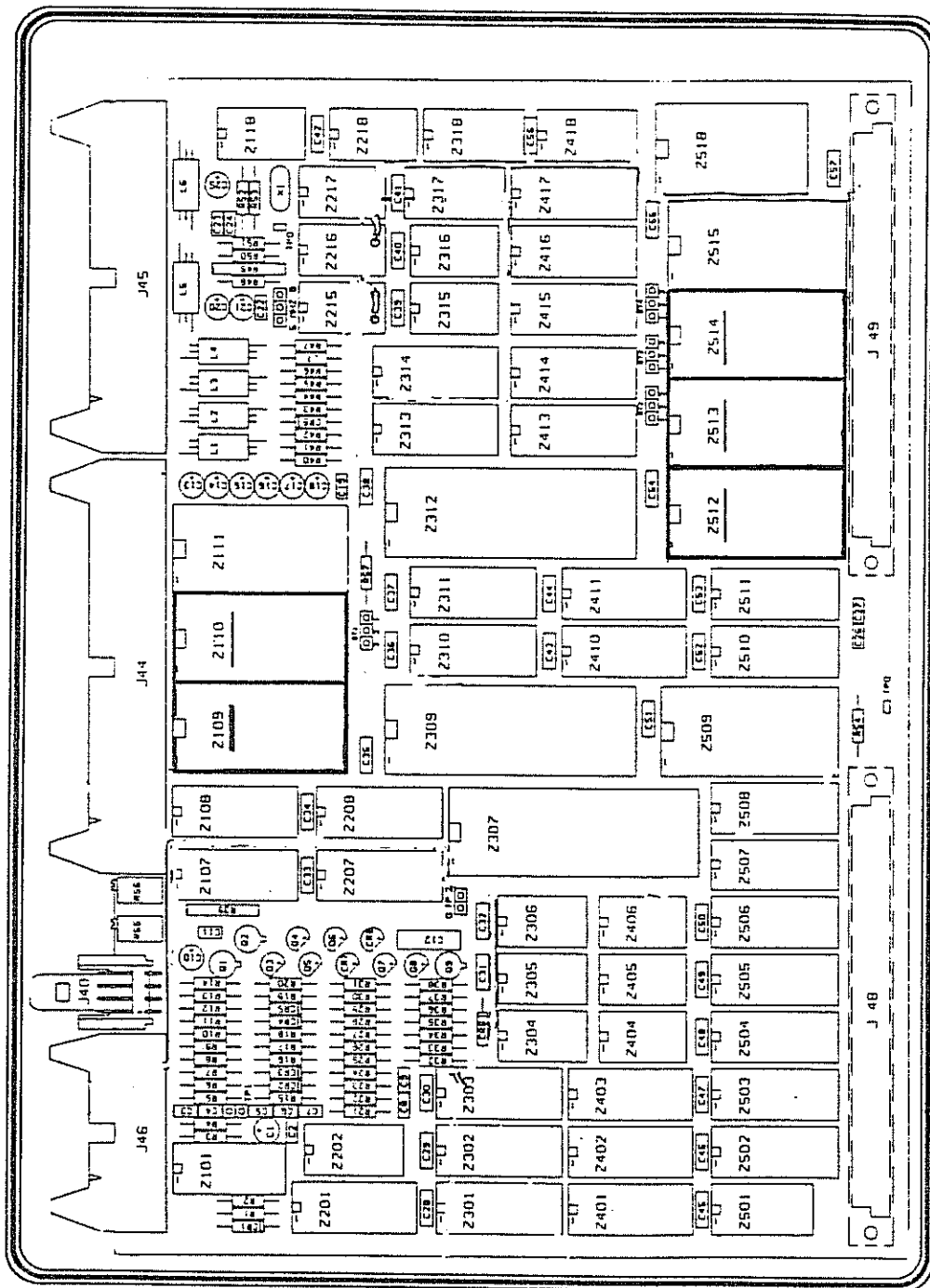
27256

Z 513

SP 630 121 - 3

27256

Z 514



Product Group : Imaging
Instrument type/model : Sigma 1 Line (AA / AC) US version
Ref.: N° : Sigma 1 Line - E.S.I. N° 10
Date : February 2nd, 1990
Contact : Eric CASTAING

SIGMA 1 LINE (AA / AC) US VERSION

Engineering Service Information N° 10

Subject

New softwares release :
SIGMA 1 AC LS (Class) - LSC (Class +) ____ VS 6.14/C6
SIGMA 1 AC CARDIO ____ VS 7.14/C6
SIGMA 1 AA LS - LSC ____ VA 6.3/C6
SIGMA 1 AA CARDIO ____ VA 7.3/C6

Improvements

Biometry modifications : 3 new tables
. HDC Head circumference
. ABC Abdominal circumference
. BND Binocular distance
Four former tables have been removed (THD ABD HIPA HIPB).

2 D to TM mode lock up problem is corrected.

Perfect horizontal tracing with the trackball.

New intrarectal multiplane probe frame rate : 8 4/7 NTSC

Ordering information

One set of Proms will be shipped f.o.c. to each Kontron Company upon written request sent for the attention of Eric Castaing. Please, mention each needed version.

Additional information

Priority code is **3** : this modification should be implemented if a unit is at hand for repair, during a maintenance visit or if a multiplane intrarectal probe is to be installed at customer's.

If the unit has been modified in the factory, the E.S.I. level N° 10 is mentioned on the "Révision/Modification" label under the keyboard of the unit.

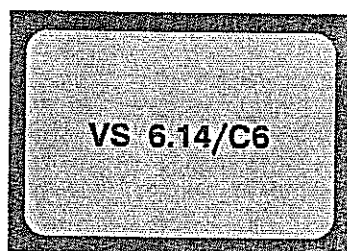
If the modification is performed on the field, the service technician should tick off level N° 10 on this "Revision/Modification" label.

Kontron Instruments S.A.
2, Avenue de Manet - Montigny le Bretonneux
Boite Postale 81
78185 Saint Quentin en Yvelines Cedex
France

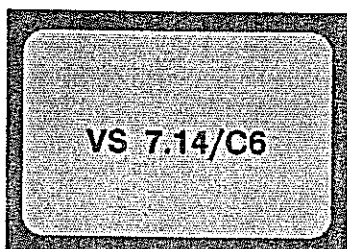
Tel. : 33 (1) 30 43 81 52
Tlx. : 698801 or 698802
Fax : 33 (1) 30 43 81 87

Softwares version check

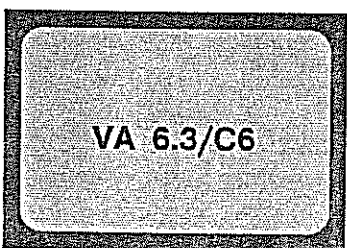
Press the **SET** and **V** touchkeys and check that the display shows after installation :



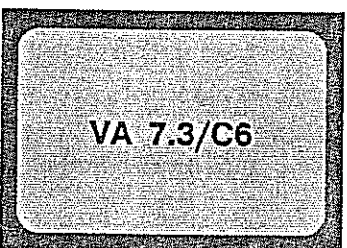
For Sigma 1 AC LS - LSC



For Sigma 1 AC CARDIO



For Sigma 1 AA LS - LSC



For Sigma 1 AA CARDIO

Modification

Observe electrostatic discharge safety rules during these operations.

1. Untighten the 6 locking screws on the base plate of Sigma 1 and disconnect the earth link between the frame and the top cover. Only then, remove the top cover.
2. Remove the metal cover of the left hand electronic box.
3. Remove all the ribbon and coaxial cables on the first three left hand pcb's.
4. Take SCON 2/MEMEX pcb's assy out of the box.
5. Exchange the proms on SCON 2 pcb (see locations on drawing page 4).
6. Perform re-assembly (from 5 to 1).
7. Check the unit performances.
8. Tick off N° 10 on E.I.S level label (Révision/Modification) under the keyboard.
9. Check that the customer's Operating Manual comes within this modification.

Caution

This E.S.I. does not apply to SIGMA 1 SC.

Prom types and part numbers

Note : access time must be at least 200 ns.

VS 6.14/C6 software (set of 5 proms) for SIGMA 1 AC LS - LSC complete description

Prom P.N.	Location	Specification	Checksum	Prom type
888 881	Z 109	630 081 -14	1CAA8D	27128
415 243	Z 110	630 310 - 1	1CFD20	27128
415 251	Z 512	630 311 - 1	1BA7E7	27128
415 278	Z 513	630 312 - 1	41881A	27258
415 288	Z 514	630 313 - 1	34FE0C	27258

VS 7.14/C6 software (set of 5 proms) for SIGMA 1 AC Cardio complete description

Prom P.N.	Location	Specification	Checksum	Prom type
888 881	Z 109	630 081 -14	1CAA8D	27128
415 332	Z 110	630 318 - 1	1CFD20	27128
415 251	Z 512	630 311 - 1	1BA7E7	27128
415 278	Z 513	630 312 - 1	41881A	27258
415 288	Z 514	630 313 - 1	34FE0C	27258

VA 6.3/C6 software (set of 5 proms) for SIGMA 1 AA LS - LSC complete description

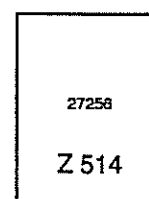
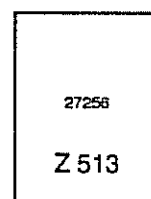
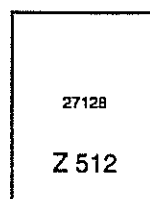
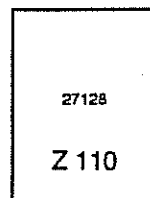
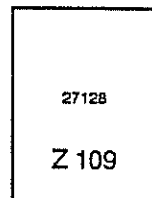
Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	630 117 - 3	1CD51C	27128
415 318	Z 110	630 318 - 1	1CDCA2	27128
415 294	Z 512	630 314 - 1	21B8F0	27258
415 308	Z 513	630 315 - 1	396AE9	27258
415 324	Z 514	630 317 - 1	35A0C8	27258

VA 7.14/C6 software (set of 5 proms) for SIGMA 1 AA Cardio complete description

Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	630 117 - 3	1CD51C	27128
415 340	Z 110	630 319 - 1	1CDCA2	27128
415 294	Z 512	630 314 - 1	21B8F0	27258
415 308	Z 513	630 315 - 1	396AE9	27258
415 324	Z 514	630 317 - 1	35A0C8	27258

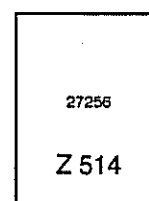
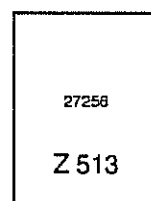
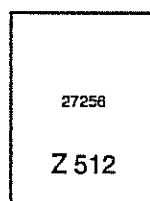
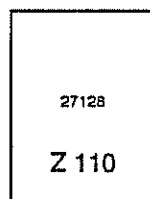
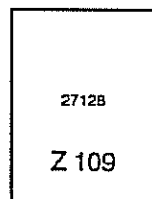
SCON 2 pcb

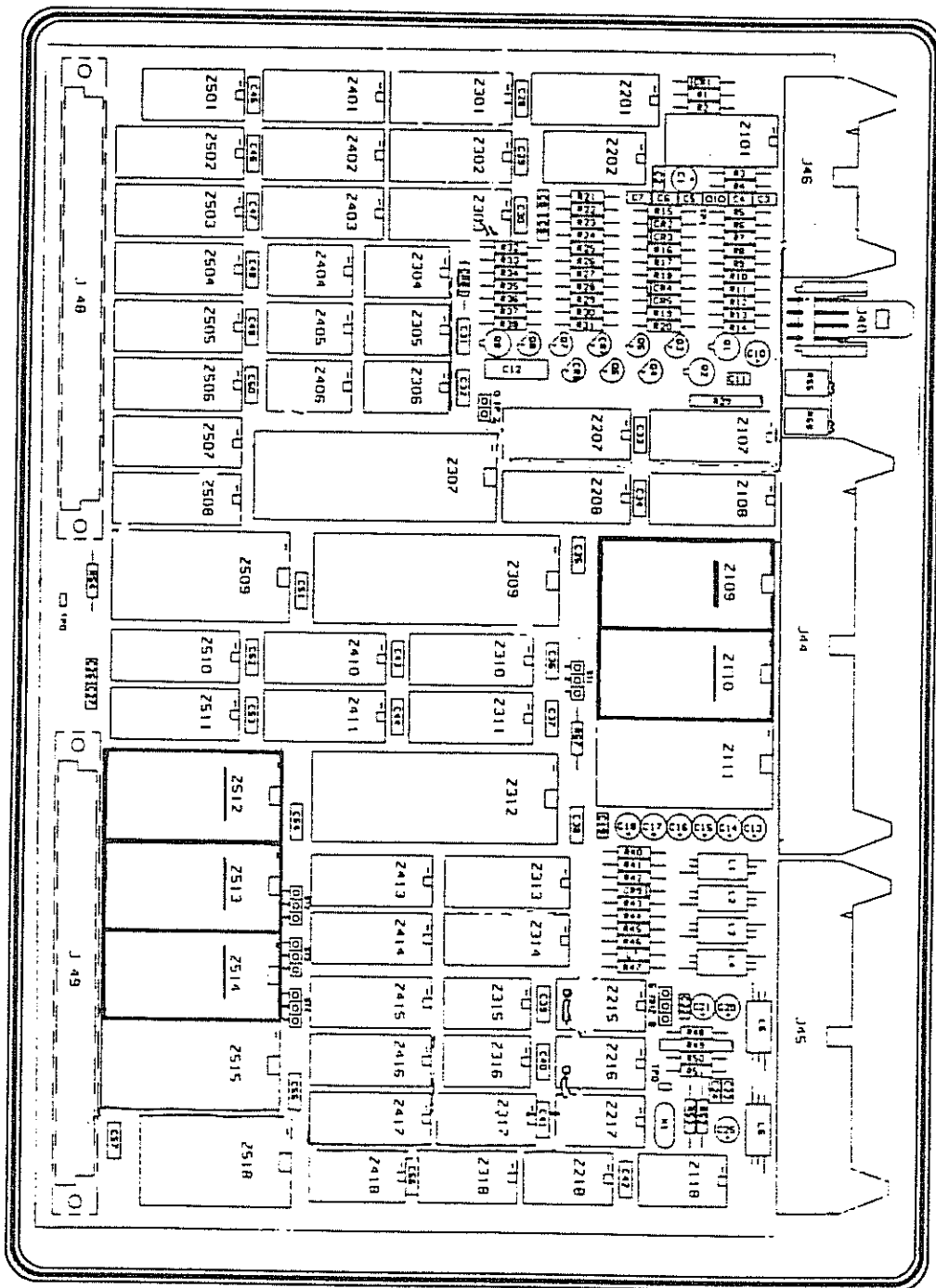
SIGMA 1 AC



SCON 2 pcb

SIGMA 1 AA





SIGMA 1

Engineering Service Information N° 11

Subject NEC cathod ray tube of the L&B monitor (P.N. 861 561) is not manufactured any more.

Solution Use new L&B monitor with CLINTON cathod ray tube.

Ordering information	P.N. 898 430	L&B Clinton monitor kit (Sigma 1 E.S.I. N° 11) including :
		1 x L&B Clinton monitor 410 403
		4 x Washes DD3 407 712
		2 x CRT holder 408 093

Additional information Priority code is 4 (information). As the TVM pcb is matched to the CRT, it is necessary to replace the whole assembly.

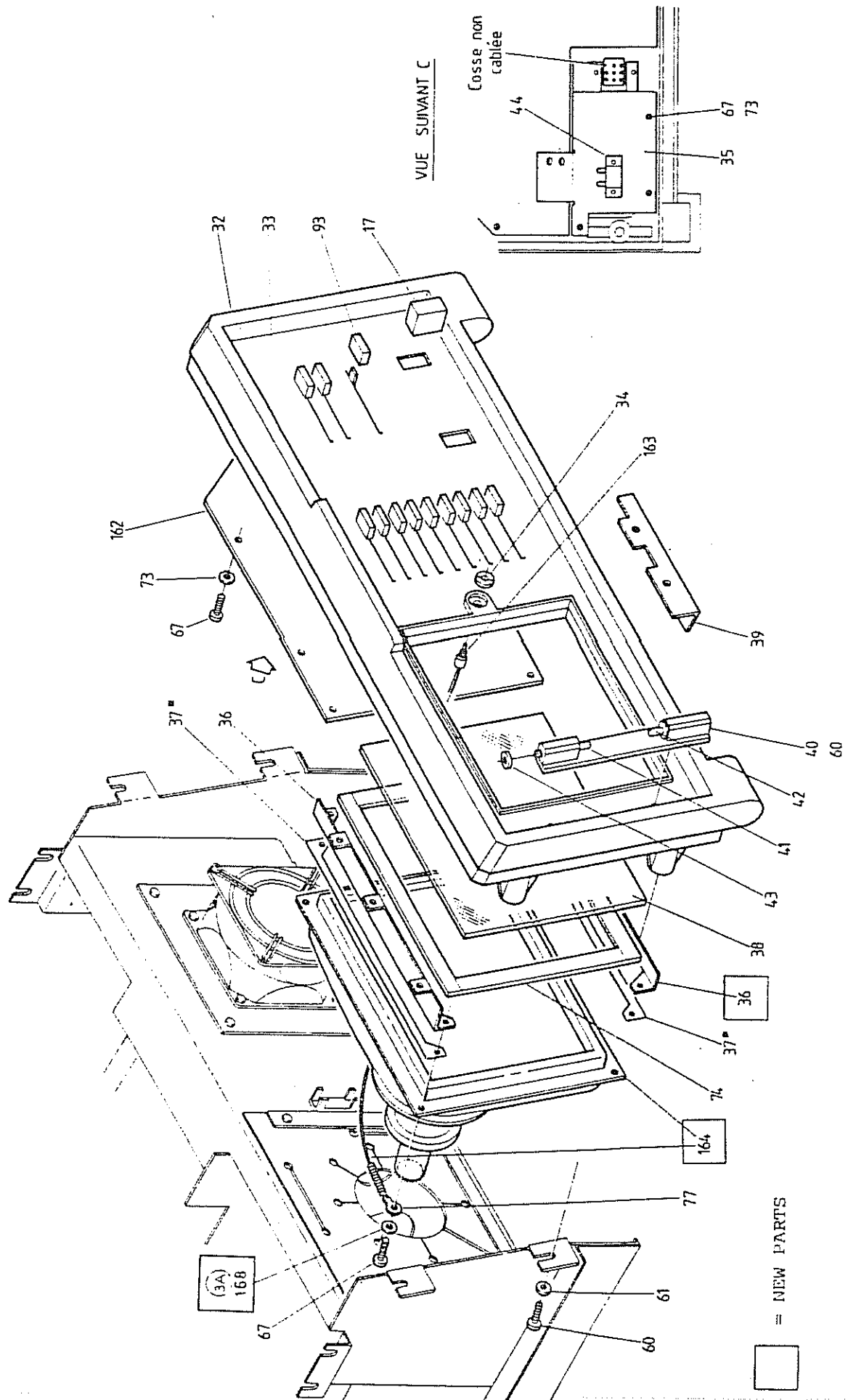
Units serial numbers 5270 and higher have been modified in the factory.

Caution Observe electrostatic discharge protection rules.

Kontron Instruments S.A.
2, Avenue du Manet - Montigny le Bretonneux
Boite Postale 81
78185 Saint Quentin en Yvelines Cedex
France

Tel : 33 (1) 30 43 81 52
Tlx : 698801 or 698802
Fax : 33 (1) 30 44 23 57

Engineering Service Information



SIGMA 1 AC/AA (all versions)

Engineering Service Information N° 12

Subject	1.	Noise on ECG signal.
	2.	Black lines radiating on 2D picture.
Solution	Hardware modification (see modification page 2) :	
	1.	Resistor 1 KOhm
	2.	Resistor 330 Ohm
Ordering information	1.	Resistor 1 KOhm 5 % 1/4 W P.N. 510 408
	2.	Resistor 330 Ohm 5 % 1/4 W P.N. 510 343
Additional information	Priority code is 3. This modification should be implemented if a unit is at hand for repair, during a maintenance visit, or if the problem is raised by a customer.	
	Units serial numbers 5369 and higher have been modified in the factory.	
Caution	Observe electrostatic discharge protection rules.	

Kontron Instruments S.A.
2, Avenue du Manet - Montigny le Bretonneux
Boite Postale 81
78185 Saint Quentin en Yvelines Cedex
France

Tel.: 33 (1) 30 43 81 52
Tlx. : 696801 or 696802
Fax: 33 (1) 30 44 23 57

Engineering Service Information

Modification

1. E.C.G. module

Remove ECG module from SIGMA 1.

Connect a 1 K resistor between IC3 pin 14 (+5V) and pins 8 and 9 (gate inputs) as a pull up resistor.

Reassemble in reverse order.

Perform safety checks.

Amend your service manual.

2. AAFRO p.c.a.

Remove AAFRO p.c.a.

Solder a 330 Ohm resistor between Z 409 / pin 23 and + 5V rails as indicated on the schematics and drawings.

Reassemble in reversed order.

Perform safety and performance checks.

Amend your service manual.

Product Group: **Imaging**
Ref. No: **90511 K.I.S. EC/mm**
Date: **July 6th, 1990**
Contact: **Eric CASTAING**

SIGMA 1 LINE - E.C.G. MODULE

Dear colleagues,

The former ECG module P.N. 855 413 is replaced by ECG module P.N. 889 687 which is the one we use for SIGMA 44 family.

The difference lies in the safety PSU of the ECG p.c.b. which is replaced by a piggy back PSU module and a pull-up resistor as explained in E.S.I. SIGMA 1 N° 12.

This new module will prevent the equipment from current spikes on + 15 V rails and from noise on ECG signal.

SIGMA 1 units serial number 5379 and higher have been modified in the factory.

With best regards,

Eric CASTAING

Encl.: Schematic & component side view

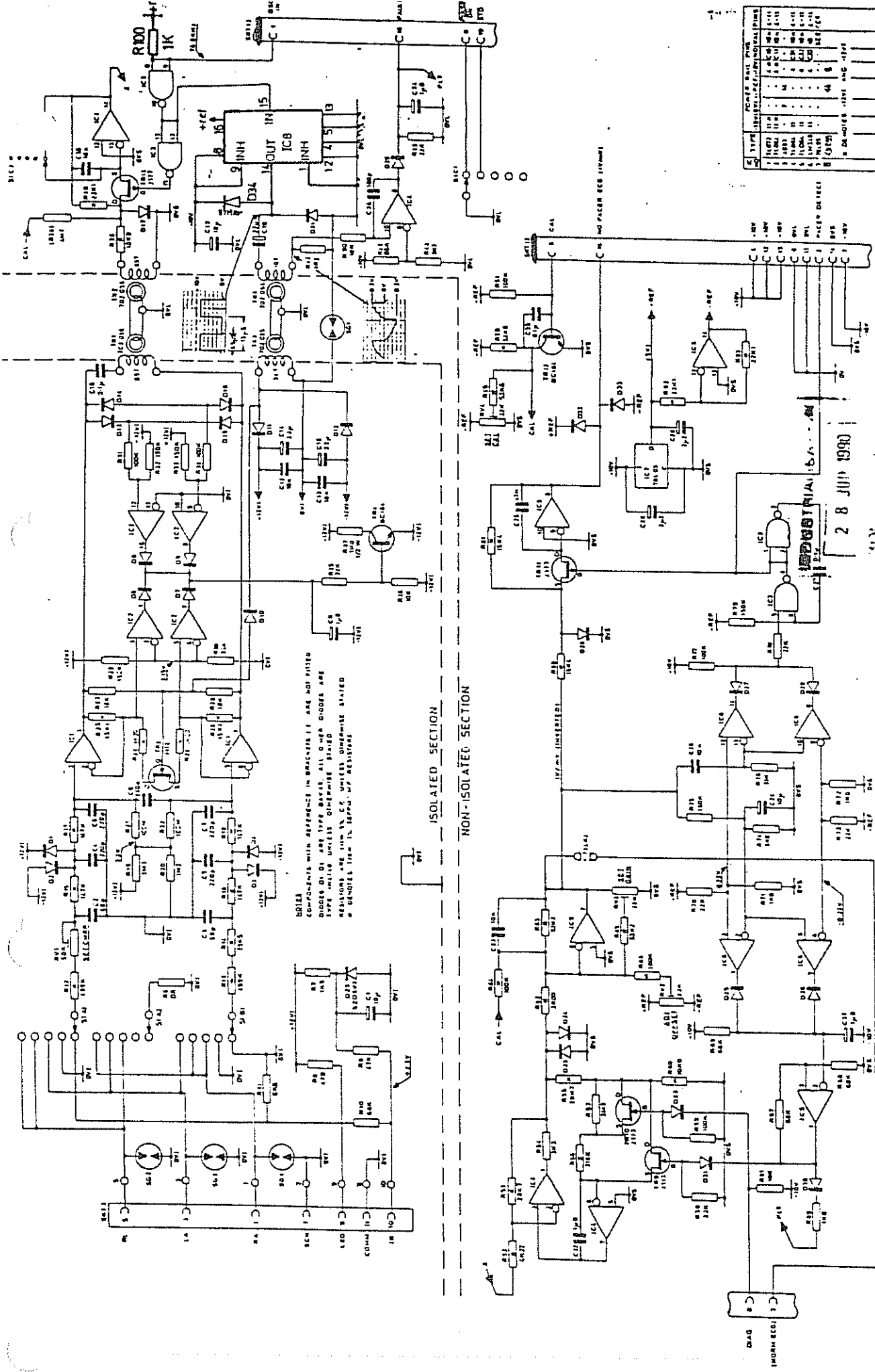
Page 1/3

Kontron Instruments S.A.,
2 Avenue de Manet
Montigny-Le Bretonneux
(Yvelines)
France
Telephone 03-0438153
Telex 638600

Kontron Instruments S.p.A.,
Via G. Fantoli 16-15
20138 Milano
Italy
Telephone 02-60721
Telex 312268

Kontron Instruments A.G.,
Bernstr. Sud 169
8013 Zurich
Switzerland
Telephone 01-4354111
Telex 801191

Kontron Instruments Ltd.,
Blackmoor Lane,
Croxley Centre
Watford, Herts. WD1 8XQ.
United Kingdom
Telephone 0922 245991/186200
Telex 960010



STABILITY:	OK
DATE:	16-12-88
VERSION:	1.0

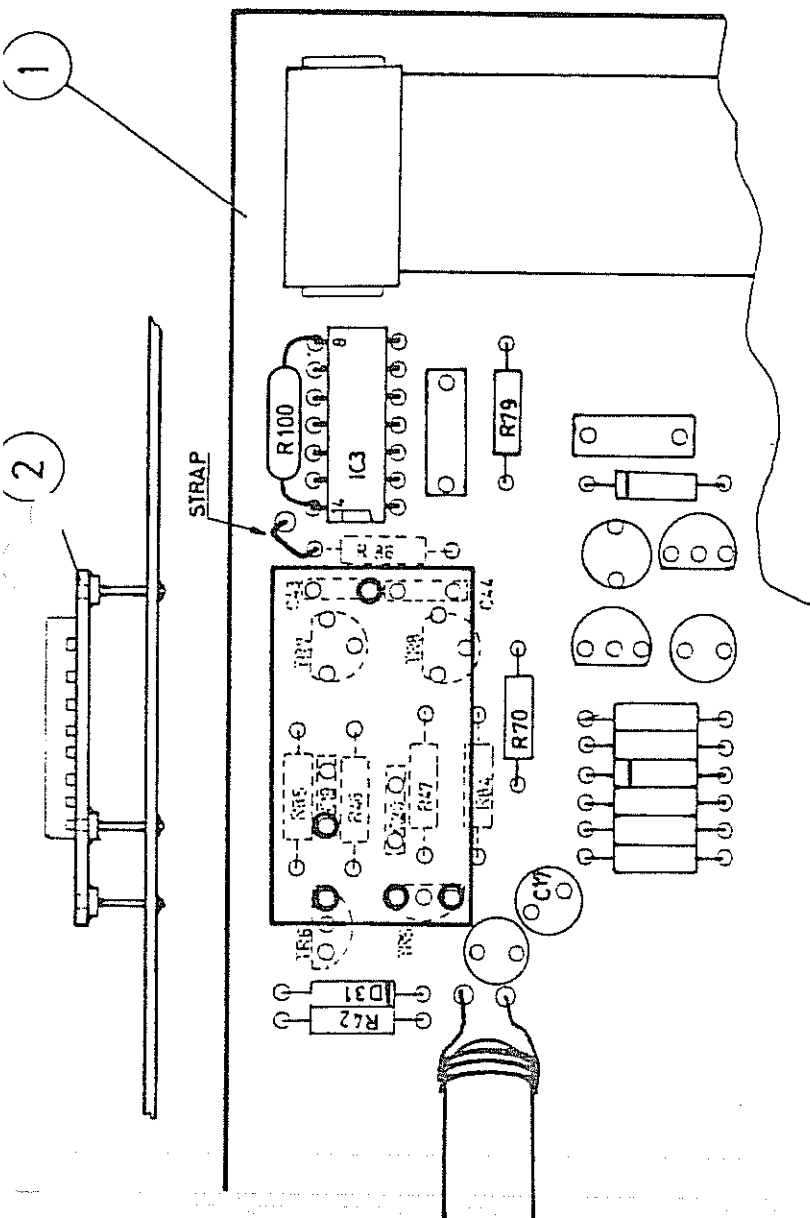
KONTRON INSTRUMENTS

01122 B.012

Modified ECG amplifier

889687

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite.



η SUPRIMER: R46_R47_ _R84_R85_R86

C19 - C20 - C43 - C44

TR5_TR6_TR7_TR8


21--REALISER LE STRAP

31 — SOUDER LA PLAQUETTE ②

4) SOUDER R100 ENTRE 8 ET 14 DE IC3.

VERSION 01 -

Rég.	Établi : BON	Date :	16-17-80	Vérifié : KC
		Modified ECG amplifier		
N° d'Ensemble		889687		
Date : 28 juin 1980				
N° de l'Ensemble				
Matière	Protection			
Traitement	Poids			
Tolérance Générale	Echelle	2/1		



KONTROM
INSTRUMENTS

14-6
90
Date
Edl.
2
01-122B312

Ce document est la propriété de Kontrom et ne peut être reproduit ou communiqué sans autorisation écrite

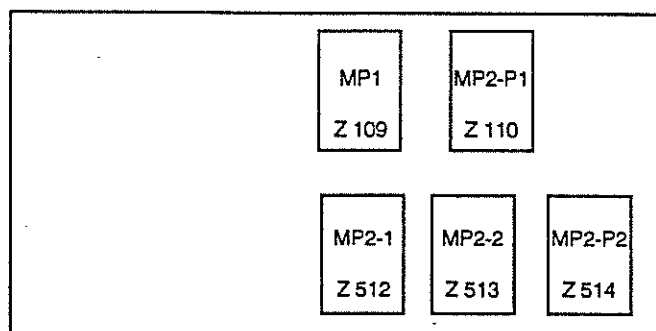
MODIFICATIONS OF SECTION 4.11.33 (a) $6.11/6.30$ - 1.89 JB
 (1) BC $UP = 0.5 \cdot 0.9 \cdot 0.14$ 14.6/40 $0.4 \sim 2$ 16.11/16 k. 14.6.92.

Product Group: **Imaging**
 Ref. No: **90388 K.I.S. EC/mm**
 Date: **June 13th, 1990 (second issue)**
 Contact: **Eric CASTAING**

SIGMA 1 - PROVISIONNAL SOFTWARE

It happens that for some special cases, we may deliver accessories with " provisional " softwares. This means that Eproms could be labeled under a " software module " number instead of a specification number.

For your information, here is the location on SCON 2 p.c.b.



SIGMA 1 LINE

Engineering Service Information N° 13

Subject New sets of German software. The first available versions are :
VS 8.14 VS 9.14 VA 8.3 VA 9.3

New features Introduction of Dr. Hansmann OB/GYN biometry tables in SIGMA with dedicated software sets. Former OB/GYN tables are removed.

Ordering information Refer to E.S.I. N° 14..

Additional information From October 1990, all SIGMA 1 software releases will include this German version as explained in next SIGMA 1 LINE E.S.I. N° 14.

Tick off N° 13 on status label of either versions 9.xx or 8.xx.

Caution This E.S.I. does not apply to SIGMA 1 SC.

Product Group: Imaging
Ref. No: 90997 K.I.S. EC/mm
Date: December 3rd, 1990
Contact: Eric CASTAING

SIGMA 1 : E.S.I. N° 14

Since the release of this E.S.I., the eprom 630 081 has been modified on SIGMA 1 AC software. It is now version 630 081-15.

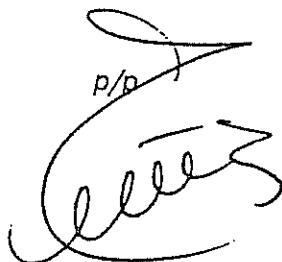
The software revision number remains unchanged.

Please, make sure you have this eprom exchanged on the following units : 5636 5637 5643 5644 5647 5648 5649 5641 5652 5653 5654 5655 5656 5657 5658 5659 5660 5661 5662 5663 5664 5665 5671 5688.

This change is notified in SIGMA 1 E.S.I. N° 14 and in SIGMA DOPPLER E.S.I. N° 15 dated November 22nd, 1990 (second edition).

With best regards,

Eric CASTAING

p/d


Page 1/1

Kontron Instruments S.A.,
2 Avenue de Manet,
Montigny-Le Bretonneux,
(Yvelines),
France
Telephone 03-0438150
Telex 303115

Kontron Instruments S.p.A.,
Via G. Fantoli 16/15
20138 Milano
Italy
Telephone 02-50721
Telex 312288

Kontron Instruments A.G.,
Bernstr. Sud 169,
8010 Zurich,
Switzerland.
Telephone 01-4354111
Telex 522191 A

Kontron Instruments Ltd.,
Blackmoor Lane
Craxley Centre,
Watford, Herts. WD1 8XQ,
United Kingdom
Telephone 0923 245991/56252
Telex 332712

SIGMA 1 LINE

Engineering Service Information N° 14

Subject New software release.

New features

7.5 S transducer optimization.

2D to TM mode lock up problem is corrected (*).

Perfect horizontal tracing with trackball (*).

New multiplane intra-rectal probe frame rate (*) from 10 fps down to 8 1/3 PAL (84/7 NTSC).

Random inverse video display in imaging mode (WGA gate array bug) corrected.

(*) already corrected in US version. Refer to E.S.I. N° 10.

Ordering information Each country will be provided with one set of required software version(s) upon written request sent for the attention of Lilliane BESNARD.

Kit soft AC/AC Cardio standard version	888 230
Kit soft AA/AA Cardio standard version	888 540

Kit soft AC/AC Cardio USA	version	888 370
Kit soft AA/AA Cardio USA	version	888 680

Kit soft AC/AC Cardio German	version	898 740
Kit soft AA/AA Cardio German	version	898 910

Additional information Priority code is 3 . Units S.N. 5636 and higher have been modified in the factory. This E.S.I. does not apply to SIGMA 1 SC.

Kontron Instruments S.A.
2, Avenue du Mahet - Montigny le Bretonneux
Boite Postale 81
78185 Saint Quentin en Yvelines Cedex
France

Tel. : 33 (1) 30 43 81 52
Tlx. : 698801 or 698802
Fax : 33 (1) 30 43 81 87

Engineering Service Information

Modification

Observe electrostatic discharge safety rules during these operations.

1. Untighten the 6 locking screws on the base plate of SIGMA 1 and disconnect the earth link between the frame and the top cover. Only then, remove the top cover.
2. Remove the metal cover of the left hand electronic box.
3. Remove the ribbon and coaxial cables on the first three left hand pcb's.
4. Take SCON 2/ MEMEX pcb's assy out of the box.
5. Exchange the prompts on SCON 2 pcb (see locations on drawing pages 3 to 5).
6. Perform re-assembly (from 5 to 1).
7. Check the unit performances.
8. Tick off N° 14 on E.S.I. level label (Revision/Modification) under the keyboard.
9. Tick off N° 13 on E.S.I. level label (Revision/Modification) under the keyboard if you use German software (Hansmann).
10. Check that the customer's Operating Manual comes within this modification.

Software version check

Press the  and  touchkeys and check that the screen shows one of the following displays after installation :

VS 1.15/C6
SIGMA 1 AC LS - LSC (Standard)

VS 3.15/C6
SIGMA 1 AC CARDIO (Standard)

VA 1.4/C6
SIGMA 1 AA LS - LSC (Standard)

VA 3.4/C6
SIGMA 1 AA CARDIO (Standard)

VS 6.15/C6
SIGMA 1 AC LS - LSC (US)

VA 7.15/C6
SIGMA 1 AA CARDIO (US)

VA 6.4/C6
SIGMA 1 AA LS - LSC (US)

VA 7.4/C6
SIGMA 1 AA CARDIO (US)

VS 8.15/C6
SIGMA 1 AC LS - LSC (German)

VS 9.15/C6
SIGMA 1 AA CARDIO (German)

VA 8.4/C6
SIGMA 1 AC LS - LSC (German)

VA 9.15/C6
SIGMA 1 AA CARDIO (German)

Prom types and part numbers of STANDARD version

Note : access time must be a least 200 ns.

VS 1.15/C6	software (set of 5 proms) for SIGMA 1 AC				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	888 881	Z 109	630 081-14	00ICAA8D	27128
	888 903	Z 110	630 082-15	00ICFF68	27128
	888 911	Z 512	630 083-15	001BA33D	27128
	888 938	Z 513	630 084-15	0042084E	27256
	888 945	Z 514	630 085-15	0034C0E7	25256

VS 3.15/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	888 881	Z 109	630 081-15	00ICAA8D	27128
	419 052	Z 110	630 353-2	00ICFF67	27128
	888 911	Z 512	630 083-15	001BA33D	27128
	888 938	Z 513	630 084-15	00420E4E	27256
	888 945	Z 514	630 085-15	0034C0E7	25256

VA 1.4/C6	software (set of 5 proms) for SIGMA 1 AA				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	630 117-4	00IC8805	27128
	875 236	Z 110	630 118-4	00ICDCC4	27128
	875 244	Z 512	630 119-4	0021AA5F	27256
	875 252	Z 513	630 120-4	0039DFF8	27256
	875 279	Z 514	630 121-4	00352CD0	25256

VA 3.4/C6	software (set of 5 proms) for SIGMA 1 AA CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	630 117-4	00IC8805	27128
	419 745	Z 110	630 380	001CDCC5	27128
	875 244	Z 512	630 119-4	0021AA5F	27128
	875 252	Z 513	630 120-4	0039DFF8	27256
	875 279	Z 514	630 121-4	00352CD0	25256

Prom types and part numbers of US version

Note : access time must be a least 200 ns.

VS 6.15/C6	software (set of 5 proms) for SIGMA 1 AC				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	888 881	Z 109	630 081-14	00ICAA8D	27128
	415 243	Z 110	630 310-2	001CFF6B	27128
	415 251	Z 512	630 311-2	001BA33D	27128
	415 278	Z 513	630 312-2	00420649	27256
	415 288	Z 514	630 313-2	0035273C	25256

VS 7.15/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	888 881	Z 109	630 081-14	00ICAA8D	27128
	415 332	Z 110	630 318-2	001CFF6B	27128
	415 251	Z 512	630 311-2	001BA33D	27128
	415 278	Z 513	630 312-2	00420649	27256
	415 288	Z 514	630 313-2	0035273C	25256

VA 6.4/C6	software (set of 5 proms) for SIGMA 1 AA				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	630 117-4	00IC8805	27128
	415 318	Z 110	630 316-2	001CDCC9	27128
	415 294	Z 512	630 314-2	0021AA5F	27256
	415 308	Z 513	630 315-2	0039E0F8	27256
	415 324	Z 514	630 317-2	003592E8	25256

VA 7.4/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	630 117-4	00IC8805	27128
	415 340	Z 110	630 319-2	001CDCC9	27128
	415 294	Z 512	630 314-2	0021AA5F	27256
	415 308	Z 513	630 315-2	0039E0F8	27256
	415 324	Z 514	630 317-2	003592E8	25256

Prom types and part numbers of GERMAN version

Note : access time must be a least 200 ns.

VS 8.15/C6	software (set of 5 proms) for SIGMA 1 AC				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	886 881	Z 109	830 081-14	001CAA8D	27128
	419 109	Z 110	830 354-2	001CFF8D	27128
	419 117	Z 512	830 355-2	001BA33D	27128
	419 141	Z 513	830 356-2	004218EA	27258
	419 168	Z 514	830 357-2	0034C733	25258

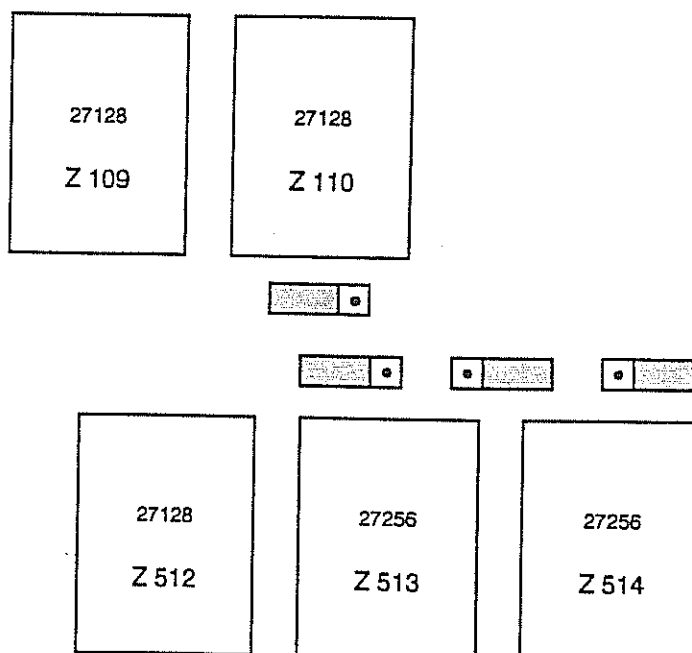
VS 9.15/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	886 881	Z 109	830 081-14	001CAA8D	27128
	419 178	Z 110	830 358-2	001CFF8D	27128
	419 117	Z 512	830 355-2	001BA33D	27128
	419 141	Z 513	830 356-2	004218EA	27258
	419 168	Z 514	830 357-2	0034C733	25258

VA 8.4/C6	software (set of 5 proms) for SIGMA 1 AA				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-4	001C8805	27128
	419 184	Z 110	830 359-2	001C0CC8	27128
	419 192	Z 512	830 360-2	0021AA5F	27258
	419 208	Z 513	830 361-2	0039DFFE	27258
	419 214	Z 514	830 362-2	0035330F	25258

VA 9.4/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-14	001C8805	27128
	419 222	Z 110	830 363-2	001C0CC8	27128
	419 192	Z 512	830 360-2	0021AA5F	27258
	419 208	Z 513	830 361-2	0039DFFE	27258
	419 214	Z 514	830 362-2	0035330F	25258

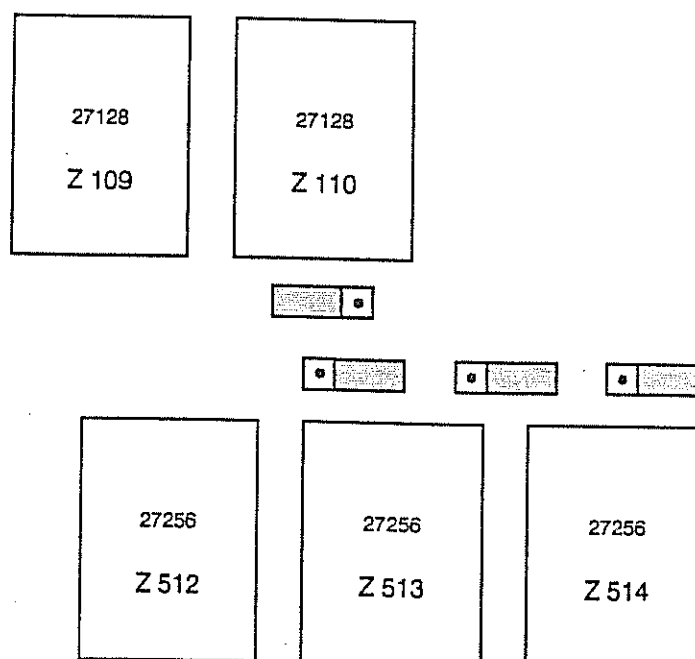
SCON 2 pcb

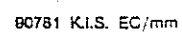
SIGMA 1 AC



SCON 2 pcb

SIGMA 1 AA





Product Group : Imaging
Instrument type/model : SIGMA 1 LINE
Ref.: N° : SIGMA DOPPLER E.S.I. N° 15
Date : November 22nd, 1990
Contact : Eric CASTAING

SIGMA 1 LINE - SIGMA DOPPLER

Engineering Service Information N° 15

CANCELS AND REPLACES EDITION ISSUED ON OCTOBER 18th, 1990

Subject

New software release. Also see E.S.I. SIGMA DOPPLER N° 15.

New features

Optimization for 7.5 S transducer.

Modification

Install the new software on DOPPLER SCON 2 pca.

Check the display shows **V0.12/C6** after implementation of the new software
by pressing the **SET** **MORE** **VERSION** touchkeys.

Ordering information

Each country will be provided with one set of required software version(s) upon
written request sent for the attention of Liliane BESNARD.

Kit soft SCON2 Sigma Doppler : P.N. 413 380

Additional information

Priority code is 3 . Units S.N. 880 and higher have been modified in the factory.

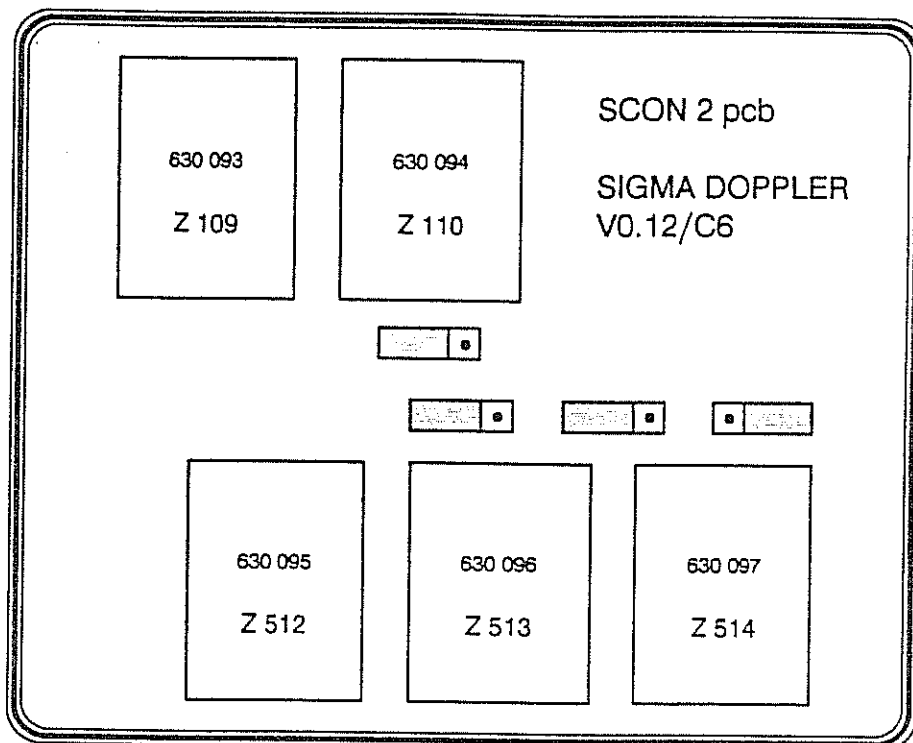
Compatibility level : C6.

Prom types and part numbers of V0.12/C6 version

Note : access time must be a least 200 ns.

V0.12/C6	software (set of 5 proms) for SIGMA DOPPLER			complete description	
	Prom P.N.	Location	Specification	Checksum	Prom type
	867 764	Z 110	630 094-12	002D9EC5	27128
	867 772	Z 109	630 093-11	003ADE62	27128
	867 799	Z 512	630 095-12	001B551A	27128
	867 802	Z 513	630 096-12	000DFCC5	27128
	867 829	Z 514	630 097-12	003AC31D	25258

Proms location on Doppler SCON 2 pca



CANCELS AND REPLACES EDITION ISSUED ON OCTOBER 18th, 1990

SIGMA 1 LINE

Engineering Service Information N° 16

Subject

New software release.

New features

New multiplane endorectal probe (Capistrano) P.N. 421 480 optimization.

Ordering information

Each country will be provided with one set of required software version(s) upon written request sent for the attention of Liliane BESNARD.

Kit soft AC/AC Cardio standard	version	888 230
Kit soft AA/AA Cardio standard	version	888 540

Kit soft AC/AC Cardio USA	version	888 370
Kit soft AA/AA Cardio USA	version	888 680

Kit soft AC/AC Cardio German	version	898 740
Kit soft AA/AA Cardio German	version	898 910

Additional information

Priority code is 3. Units S.N. 6139, 6140, 6143, 6144, 6147 and higher have been modified in the factory. Compatibility level = C6. This E.S.I. does not apply to SIGMA 1 SC.

Observe electrostatic protection rules when handling subassemblies !

Modification

Observe electrostatic discharge safety rules during these operations.

1. Untighten the 6 locking screws on the base plate of SIGMA 1 and disconnect the earth link between the frame and the top cover. Only then, remove the top cover.
2. Remove the metal cover of the left hand electronic box.
3. Remove the ribbon and coaxial cables on the first three left hand pcb's.
4. Take SCON 2/ MEMEX pcb's assy out of the box.
5. Exchange the proms on SCON 2 pcb (see locations on drawing pages 3 to 5).
6. Perform re-assembly (from 5 to 1).
7. Check the unit performances.
8. Tick off N° 16 on E.S.I. level label (Revision/Modification) under the keyboard.
9. Tick off N° 13 on E.S.I. level label (Revision/Modification) under the keyboard if you use German software (Hansmann).
10. Check that the customer's Operating Manual comes within this modification.

Software version check

Press the **SET** and **V** touchkeys and check that the screen shows one of the following displays after installation :

VS 1.16/C6

SIGMA 1 AC LS - LSC (Standard)

VS 3.16/C6

SIGMA 1 AC CARDIO (Standard)

VA 1.5/C6

SIGMA 1 AA LS - LSC (Standard)

VA 3.5/C6

SIGMA 1 AA CARDIO (Standard)

VS 6.16/C6

SIGMA 1 AC LS - LSC (US)

VS 7.16/C6

SIGMA 1 AC CARDIO (US)

VA 6.5/C6

SIGMA 1 AA LS - LSC (US)

VA 7.5/C6

SIGMA 1 AA CARDIO (US)

VS 8.16/C6

SIGMA 1 AC LS - LSC (German)

VS 9.16/C6

SIGMA 1 AC CARDIO (German)

VA 8.5/C6

SIGMA 1 AA LS - LSC (German)

VA 9.5/C6

SIGMA 1 AA CARDIO (German)

Prom types and part numbers of STANDARD version

Note : access time must be a least 200 ns.

VS 1.16/C6	software (set of 5 proms) for SIGMA 1 AC				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	868 881	Z 109	830 081-15	001C24E5	27128
	868 903	Z 110	830 082-17	001C850A	27128
	868 911	Z 512	830 083-17	001B9F8D	27128
	868 938	Z 513	830 084-17	0042011D	27258
	868 945	Z 514	830 085-17	0034AC07	25258
VS 3.16/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	868 881	Z 109	830 081-15	001C24E5	27128
	419 052	Z 110	830 353-4	001C850B	27128
	868 911	Z 512	830 083-17	001B9F8D	27128
	868 938	Z 513	830 084-17	0042011D	27258
	868 945	Z 514	830 085-17	0034AC07	25258
VA 1.5/C6	software (set of 5 proms) for SIGMA 1 AA				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-4	001C8805	27128
	875 238	Z 110	830 118-8	001C8EL82	27128
	875 244	Z 512	830 119-8	0021C077	27258
	875 252	Z 513	830 120-8	00387C48	27258
	875 279	Z 514	830 121-8	00351731	25258
VA 3.5/C6	software (set of 5 proms) for SIGMA 1 AA CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-4	001C8805	27128
	419 745	Z 110	830 380-3	001C8EL82	27128
	875 244	Z 512	830 119-8	0021C077	27258
	875 252	Z 513	830 120-8	00387C48	27258
	875 279	Z 514	830 121-8	00351731	25258

Prom types and part numbers of US version

Note : access time must be a least 200 ns.

VS 6.16/C6	software (set of 5 proms) for SIGMA 1 AC				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	868 881	Z 109	830 081-15	001C24E5	27128
	415 243	Z 110	830 310-4	001C850F	27128
	415 251	Z 512	830 311-4	001B9F8D	27128
	415 278	Z 513	830 312-4	0042011D	27258
	415 288	Z 514	830 313-4	00354A07	25258
VS 7.16/C6	software (set of 5 proms) for SIGMA 1 AC CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	868 881	Z 109	830 081-15	001C24E5	27128
	415 332	Z 110	830 318-4	001C850F	27128
	415 251	Z 512	830 311-4	001B9F8D	27128
	415 278	Z 513	830 312-4	0042004D	27258
	415 288	Z 514	830 313-4	00351245	25258
VA 6.5/C6	software (set of 5 proms) for SIGMA 1 AA				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-4	001C8805	27128
	415 318	Z 110	830 318-4	001C8E87	27128
	415 294	Z 512	830 314-4	0021C07A	27258
	415 308	Z 513	830 315-4	00387C48	27258
	415 324	Z 514	830 317-4	00357C3F	25258
VA 7.5/C6	software (set of 5 proms) for SIGMA 1 AA CARDIO				complete description
	Prom P.N.	Location	Specification	Checksum	Prom type
	875 228	Z 109	830 117-4	001C8805	27128
	415 340	Z 110	830 319-4	001C8E87	27128
	415 294	Z 512	830 314-4	0021C07A	27258
	415 308	Z 513	830 315-4	00387C48	27258
	415 324	Z 514	830 317-4	00357C3F	25258

Prom types and part numbers of GERMAN version

Note : access time must be a least 200 ns.

VS 8.16/C8 software (set of 5 proms) for SIGMA 1 AC complete description

Prom P.N.	Location	Specification	Checksum	Prom type
868 881	Z 109	830 081-15	001C24E5	27128
419 109	Z 110	830 354-4	001CB511	27128
419 117	Z 512	830 355-4	001B58FD	27128
419 141	Z 513	830 356-4	0042011D	27258
419 188	Z 514	830 357-4	0034B248	25258

VS 9.16/C8 software (set of 5 proms) for SIGMA 1 AC CARDIO complete description

Prom P.N.	Location	Specification	Checksum	Prom type
868 881	Z 109	830 081-15	001C24E5	27128
419 176	Z 110	830 358-4	001CB511	27128
419 117	Z 512	830 355-3	001B58FD	27128
419 141	Z 513	830 356-3	0042011D	27258
419 188	Z 514	830 357-3	0034B248	25258

VA 8.5/C8 software (set of 5 proms) for SIGMA 1 AA complete description

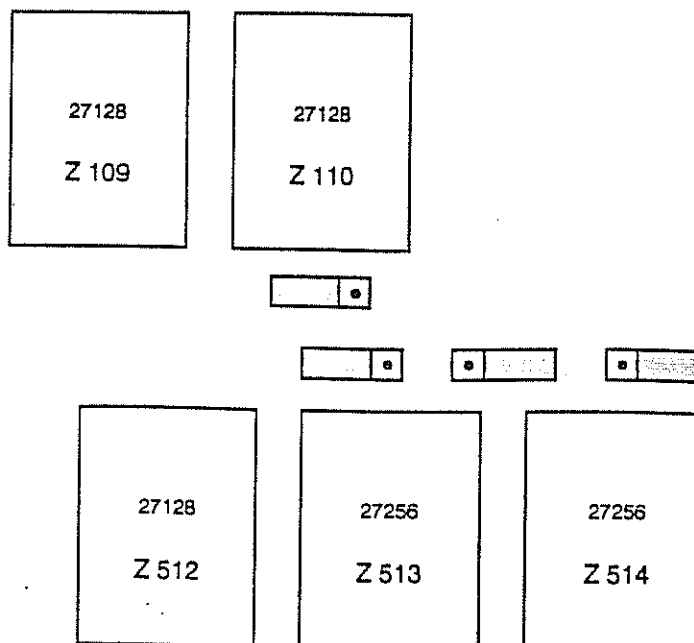
Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	830 117-4	001C8805	27128
419 184	Z 110	830 358-4	001C8E59	27128
419 192	Z 512	830 380-4	0021C07A	27258
419 206	Z 513	830 381-4	00397C48	27258
419 214	Z 514	830 382-3	00351D72	25258

VA 9.5/C8 software (set of 5 proms) for SIGMA 1 AA CARDIO complete description

Prom P.N.	Location	Specification	Checksum	Prom type
875 228	Z 109	830 117-4	001C8805	27128
419 222	Z 110	830 383-4	001C8E59	27128
419 192	Z 512	830 380-3	0021C07A	27258
419 206	Z 513	830 381-3	00397C48	27258
419 214	Z 514	830 382-3	00351D72	25258

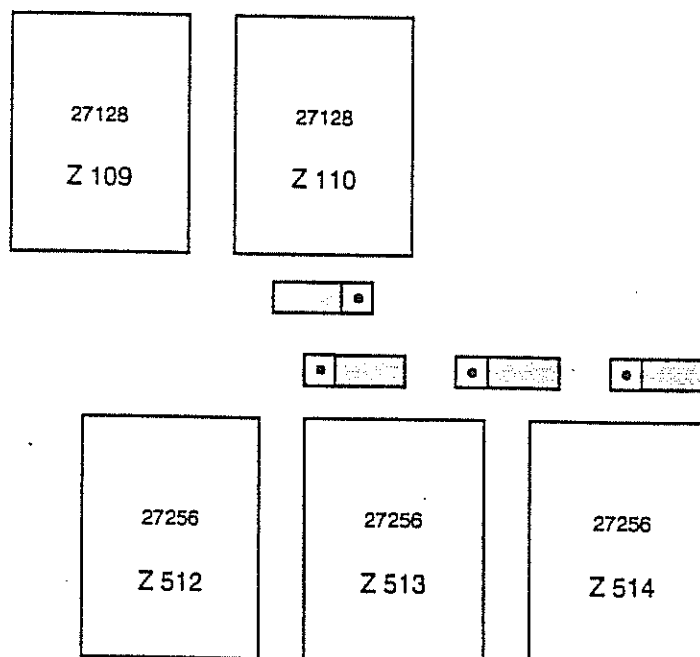
SCON 2 pcb

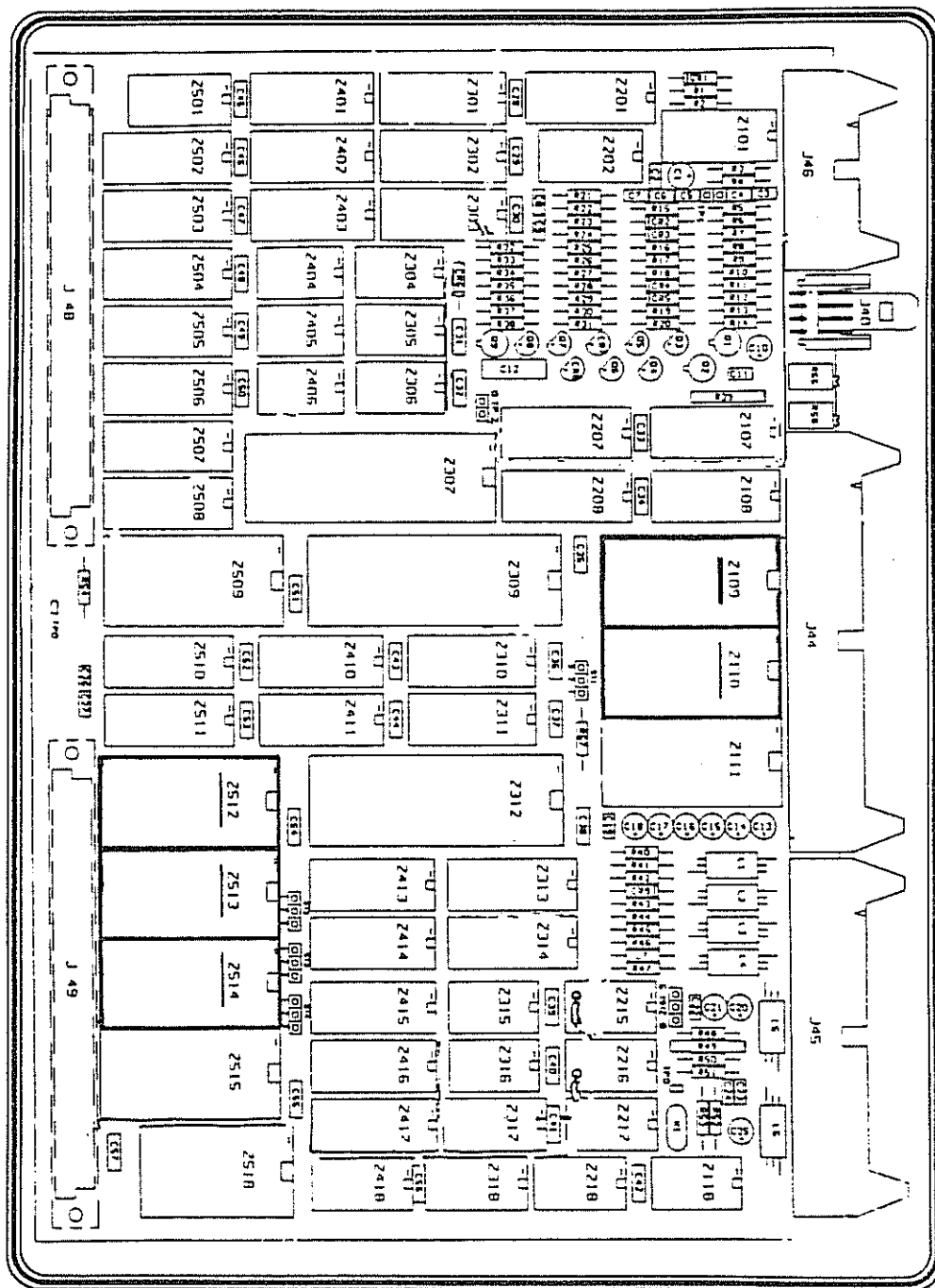
SIGMA 1 AC



SCON 2 pcb

SIGMA 1 AA





Product Group: Imaging
Ref. No: 90314 K.I.S. EC/mm
Date: September 14th, 1990
Contact: Eric CASTAING

MODIFICATION ON PERIP P.C.B.

The first version of PERIP p.c.b. does not include the ECG module detection nor the CARDIS signal inhibition which may cause some spurious problem with Doppler.

A. If you wish to upgrade this p.c.b. on site, here is the procedure :
(schematics ref. 03 121 006 and 03 121 B 306)

1. Disconnect J 811 / Pin 15 from ground on both sides of the p.c.b.
2. Link J 811 / Pin 15 to C21 and R 30.
3. Cut the tracks from C 21 - R 30 to J 810 / Pin 34 (near the connector).
4. Connect 1 resistor 10 KOhm 1/4 W 5 % between Z 105 / Pin 11 to + 5V.
Connect 1 resistor 10 KOhm 1/4 W 5 % between Z 105 / Pin 13 to + 5V.

All old p.c.b.'s returned to the factory are upgraded.

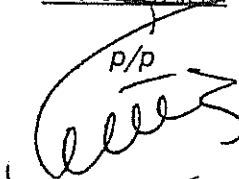
B. If you need to connect a SIGMA DOPPLER to a SIGMA 1 which is not a Cardio version, then you have to simulate the ECG module to enable the DOPPLER operation. The modification is as follows :

Link J811 / PIN 15 to 0 Volt.

With best regards,

Eric CASTAING

p/p



Page 1/1

Kontron Instruments S.A.,
2 Avenue de Manet
Montigny-Le Bretonneux
(Yvelines)
France
Telephone 03-0436152
Telex 890500

Kontron Instrumente S.p.A.,
Via G. Fantoli 16/15
20138 Milano
Italy
Telephone 03-50721
Telex 312288

Kontron Instruments A.G.,
Bernerstr. Sud 169,
8010 Zurich,
Switzerland
Telephone 01-4354111
Telex 822191 A

Kontron Instruments Ltd.,
Blackmoor Lane
Croxley Centre
Watford, Herts. WD1 8XO
United Kingdom
Telephone 0920 245991 56362
Telex 930701

Product Group: Imaging
Ref. No: 90586 K.I.S. EC/mm
Date: September 14th, 1990
Contact: Eric CASTAING

ULTRASOUND TRANSDUCERS : IMPROVEMENTS

Dear Colleagues,

Since June, all mechanical scanheads produced in Montigny factory have been improved with a stainless steel ring around the membrane in the contact area with the body. This new ring increases the tightness and consequently reduces the occurrence of unstuck membrane and bubbles.

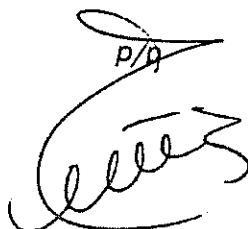
Transducers serial numbers listed herebelow and higher have been modified in the factory :

Wobbler	3.5	A	# 1858	Annular Array	3.5	A	# 10342
Wobbler	3.5	B	# 3768	Annular Array	3.5	B (D)	# 18203
Wobbler	3.5	C	# 33182	Annular Array	5.0	A	# 13263
Wobbler	3.5	D	# 7437	Annular Array	5.0	B (D)	# 19125
Wobbler	3.5	DS	# ALL	Annular Array	7.5	B (D)	# 20141
Wobbler	7.5	B	# 5632				

All transducer sent out for repair will be upgraded.

With best regards,

Eric CASTAING

P/q


Page 1/1

Kontron Instruments S.A.,
2 Avenue de Manet,
Montigny Bretonneux,
(Yvelines)
France
Telephone 01-69-68-152
Telex 70663

Kontron Instruments S.p.A.,
Via G. Fantini 16/15
20138 Milano
Italy
Telephone 02-50701
Telex 212235

Kontron Instruments A.G.,
Bernstr. Süd 169,
8010 Zurich,
Switzerland
Telephone 01-4354111
Telex 822191 A

Kontron Instruments Ltd.,
Blackmoor Lane
Croxley Centre
Watford, Herts. WD1 8XQ,
United Kingdom
Telephone 0923 245991/56352
Telex 332212

Product Group: Imaging
Ref. No: 90663 K.I.S. EC/mm
Date: September 14th, 1990
Contact: Eric CASTAING

SIGMA 1 KEYBOARDS

This is to inform you that the "flat" keyboard is no longer available. Only the "tactile" keyboard remains.

Tactile keyboard English	P.N. 874 523
Tactile keyboard French	P.N. 874 604
Keyboard ribbon cable 18B	P.N. 884 413
Connector shell	P.N. 884 421

Best regards,

Eric CASTAING

p/p



Page 1/1

Kontron Instruments S.A.,
2 Avenue de Manet,
Montigny-Le Bretonneux,
(Yvelines)
France
Telephone 06-0436152
Telex 60860

Kontron Instruments S.p.A.,
Via G. Fantini 16/15
20138 Milano
Italy
Telephone 02-50721
Telex 312288

Kontron Instruments A.G.,
Bernerstr. Sud 169,
8010 Zurich
Switzerland
Telephone 01-4354111
Telex 822191 A

Kontron Instruments Ltd.,
Blackmoor Lane,
Croxley Centre,
Watford, Herts. WD1 8XQ
United Kingdom
Telephone 0823 245991-56250
Telex 932012

SIGMA 1AC Service Manual

LIST OF SCHEMATICS

1/3

SCON II	36	120		006	Diagrams 1/2 & 2/2
SCON II	03	121	B	309	
MODIF. SCON II	03	121	B	311	
MEMEX	03	121		002	Diagrams 1/2 & 2/2
MEMEX	03	121	B	302	
PERIP	03	121		006	
PERIP	03	121	B	306	
COMPHO	03	120	B	005	
COMPHO	03	120	B	305	
PARSIO	03	121		007	
PARSIO	03	121	B	307	
FIST	03	121		003	Diagrams 1/2 & 2/2
FIST	03	121	B	303	
CARDIS	03	121		005	Diagrams 1/2 & 2/2
CARDIS	03	121	B	305	
POLIN	03	120	B	004	
POLIN	03	120	C	304	
WOMOT II	03	121		010	
WOMOT II	03	121	B	310	
IFDOD	03	120		001	Diagrams 1/2 & 2/2
IFDOD	03	120	B	301	
MEFRO	03	120		002	
MEFRO	03	120	B	302	
SGM II MODULE	22	120	B	332	
SGM II MODULE	22	120	D	032	

SIGMA 1AC Service Manual

LIST OF SCHEMATICS

2/3

SISEND II	03	120	011	Diagrams 1/2 & 2/2
SISEND II	03	120	B 311	
AAFRO	03	120	012	
AAFRO	03	120	312	
ATFOC	03	120	013	
ATFOC	03	120	313	
MASIC	03	120	014	Diagrams 1/2 to 2/2
MASIC	03	120	314	
SMD	03	120	016	
LIFRO	03	120	003	
LIFRO	03	120	B 303	
TFOC	50	002	D 303	
TFOC	50	002	E 003	
INSEC B	03	120	C 010	
INSEC B	03	120	B 310	
ANREF	03	122	001	
ANREF	03	122	A 301	
BX CODE	03	170	A 001	
BX CODE	03	170	A 301	
WOBBLER	03	170	A 002	
FREEZE TM / 2D footswitches	03	130	B 003	
TV MONITOR (L&B)	SP	640	001	Diagrams 1/6 to 6/6
POWER SUPPLY (Elba)				
ECG AMPLIFIER				

SIGMA 1AC Service Manual

LIST OF SCHEMATICS

3/3

ANNULAR SWITCHING BOX

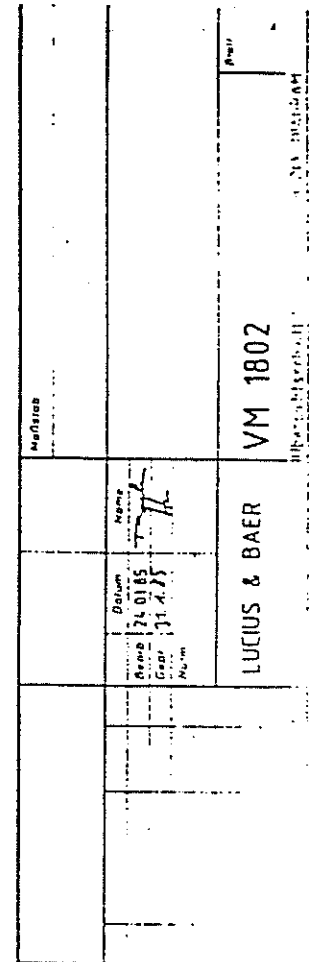
MALCO	03	180	001	
MALCO	03	180	301	
RELAY	03	180	002	
RELAY	03	180	302	
Cable capteur COM.AA	03	172	005	
Cable Doppler COM.AA/COM.WOB	03	180	003	Common

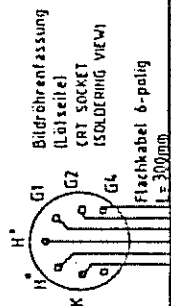
SECTORIAL SWITCHING BOX

COM.WOB (PCA1+ PCA2)	03	175	001	
COM.WOB 1	03	175	301	
COM.WOB 2	03	175	302	
Cable capteur COM.WOB	03	175	006	
Cable capteur COM.AA/COM.WOB	03	180	003	Common

LINEAR SWITCHING BOX

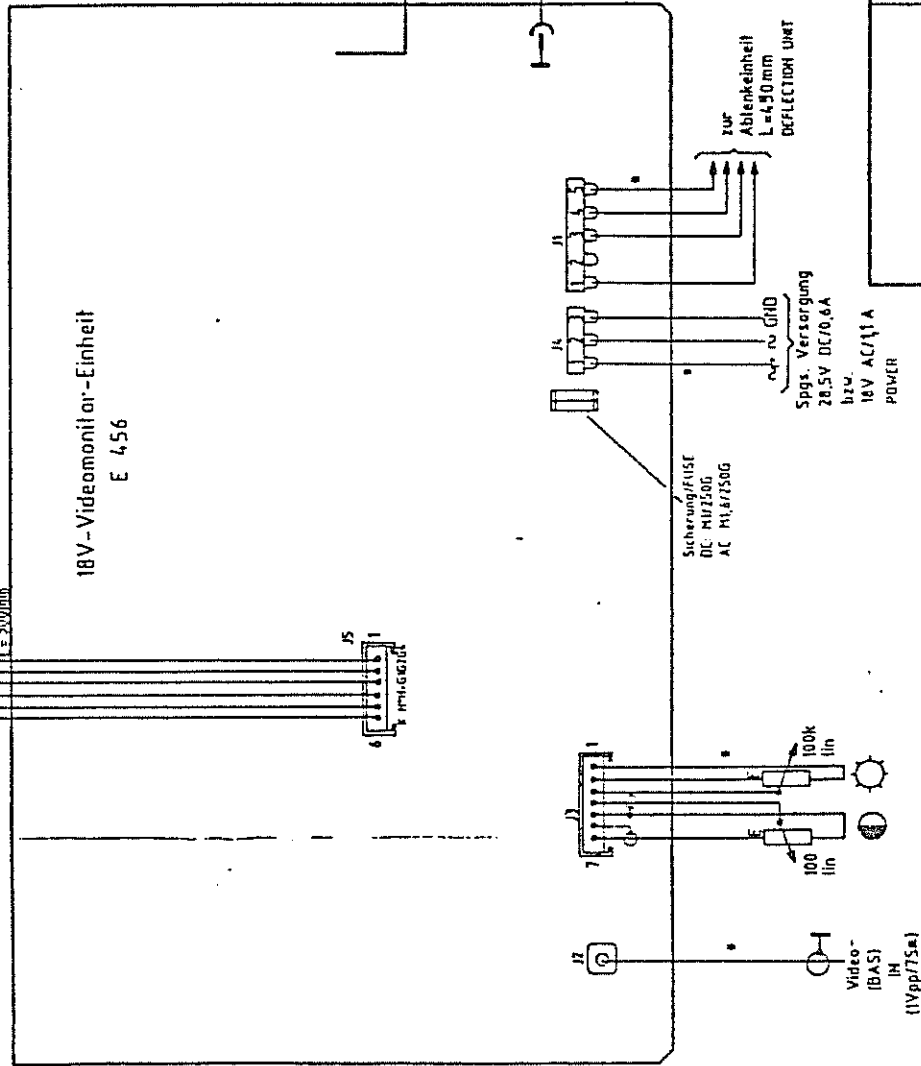
COM.LIN (PCA1+ PCA2)	03	175	003	
COM.LIN 1	03	175	303	
COM.LIN 2	03	175	304	
Cable capteur COM.LIN	03	175	007	





18V - Videomonitor-Einheit E 456

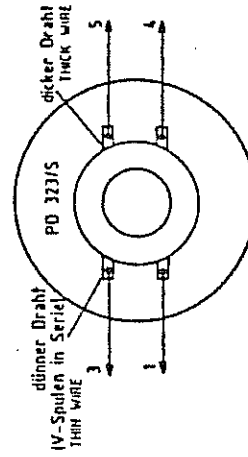
Ablenkeinheit, Bildröhre und Leiterplatten mit SM gelasert



• Verbindung vom Anwender
CUSTOMER CONNECTION

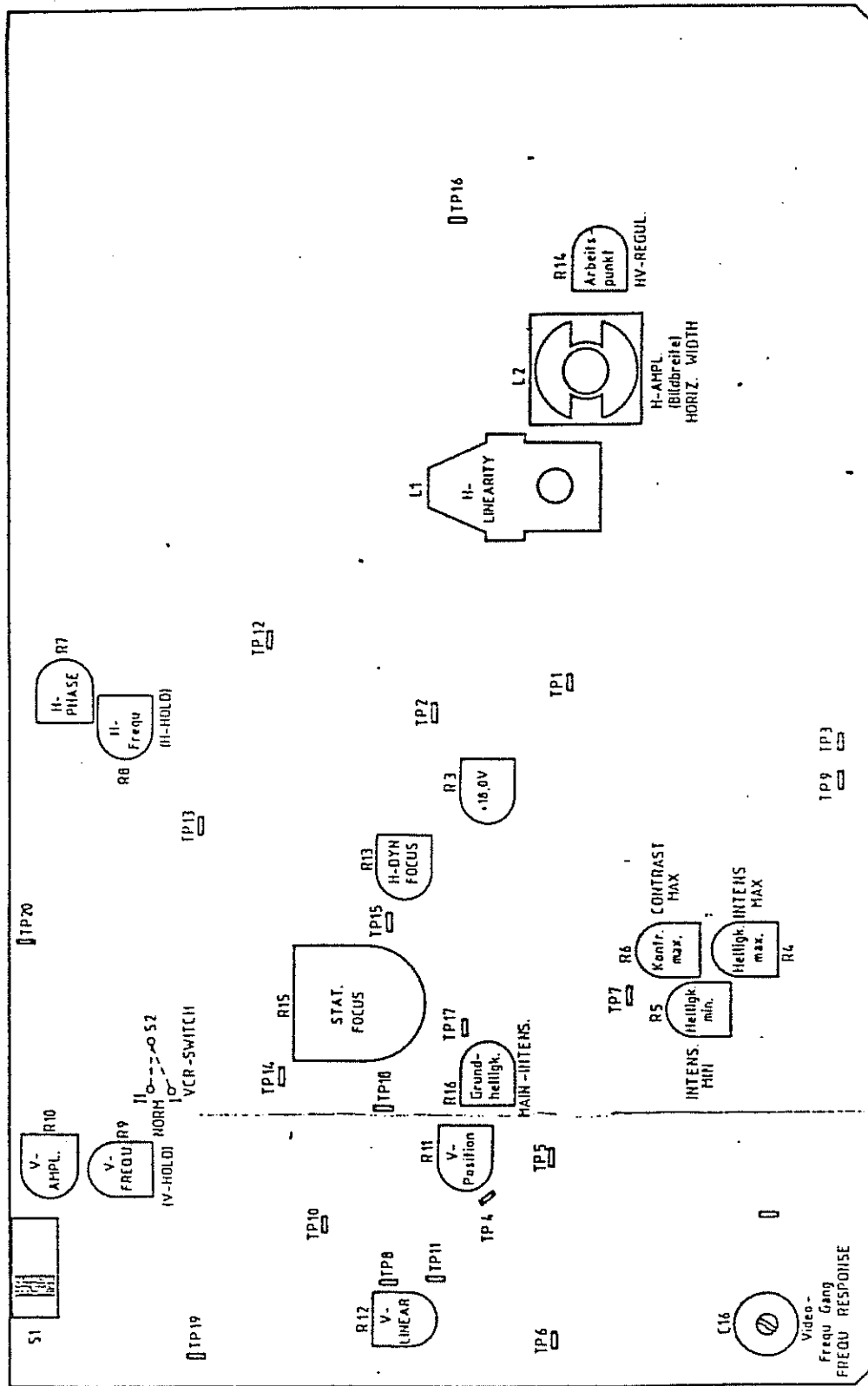
Nachbeschleunigungsanschluß
Bildröhre
CRT-HT

Erdbelag/Bildröhre

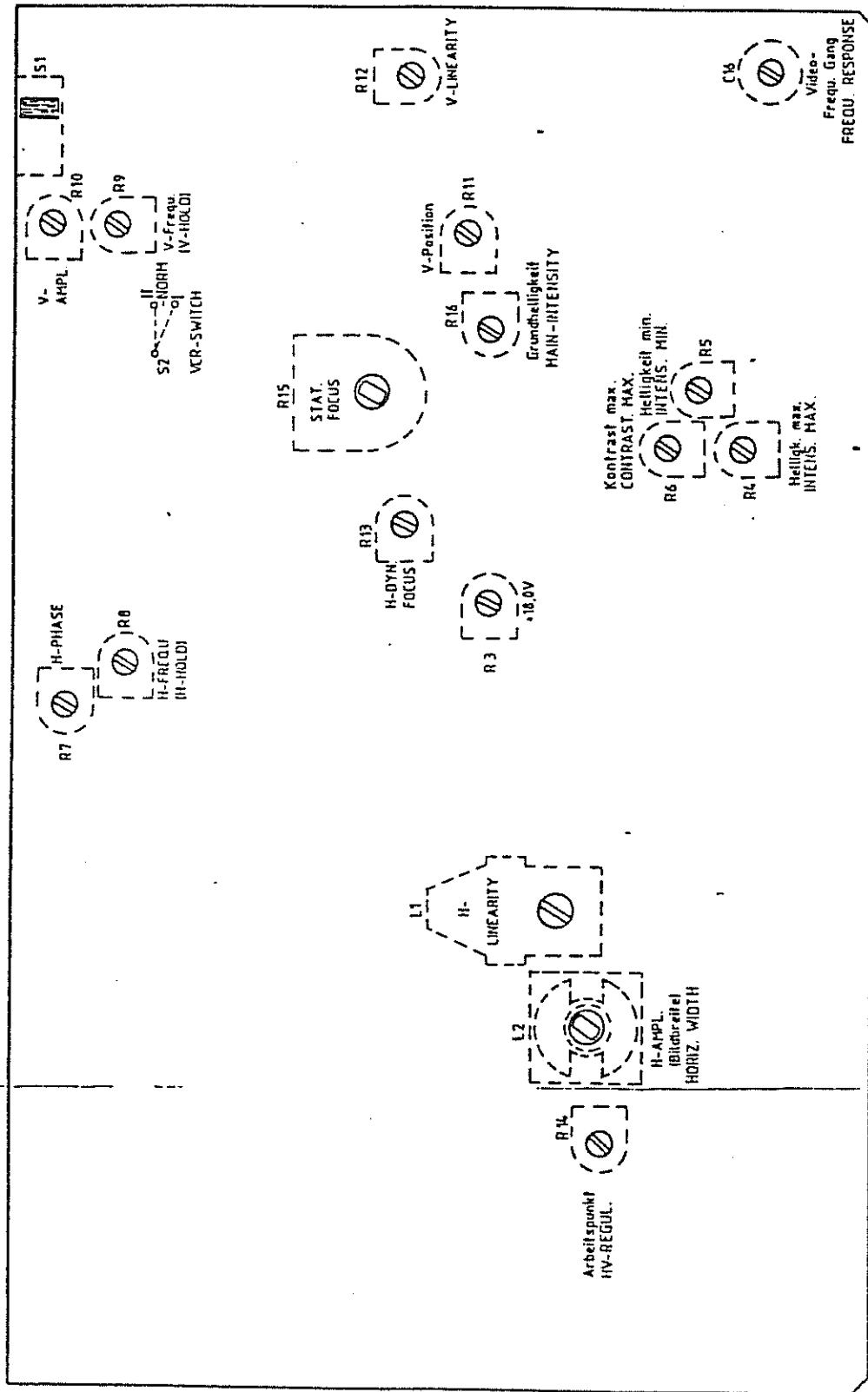


Name		Datum		Name	
E 456		29.11.84		Th	
Gepr.	29.11.84	Depr.		Norm.	
LUCIUS & BAER					
18V - Videomonitor-Einheit					

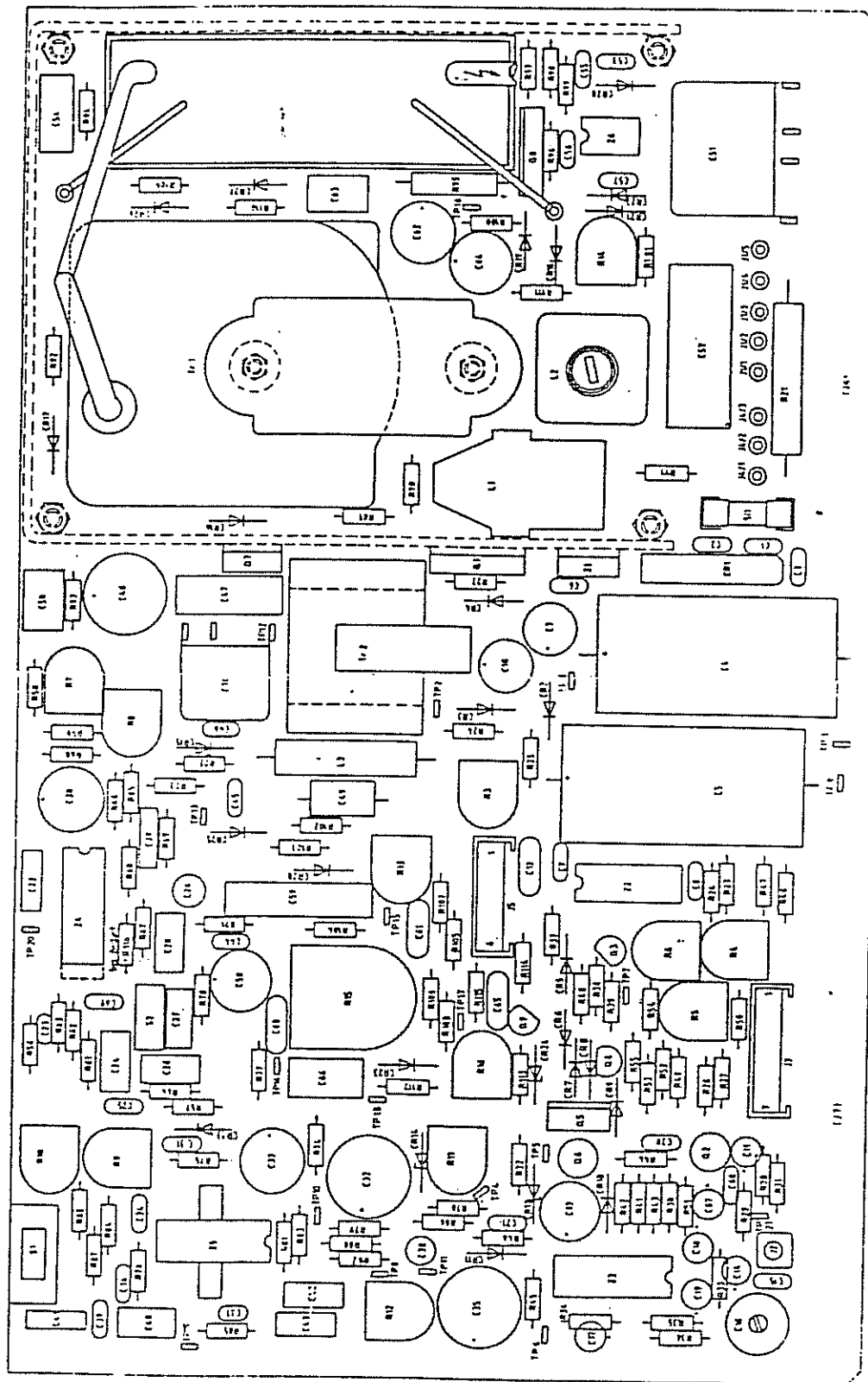
50 Hz 60



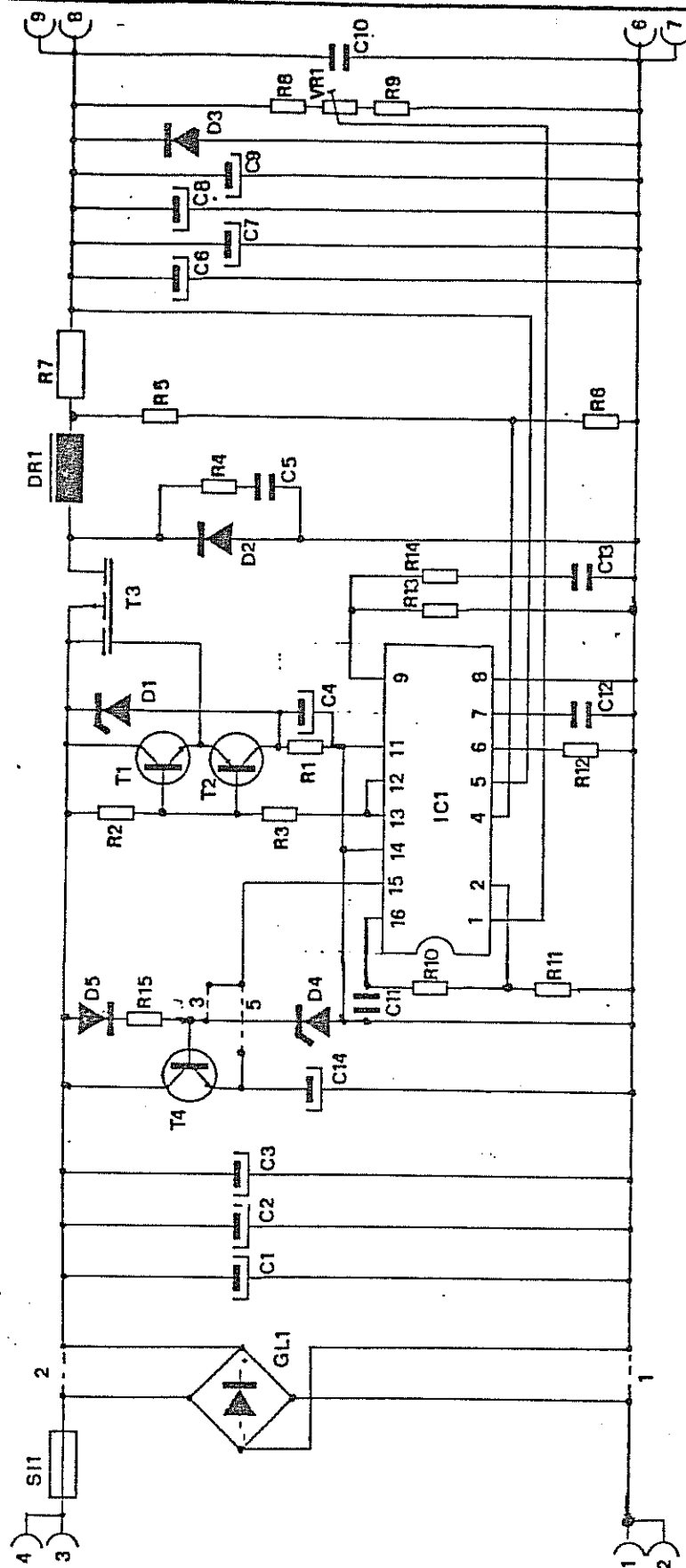
Machete		E 456		18V-Videomonitor-Einheit		Bestück-Sette / COMPONENT VIEW		ADJUSTMENT DIAGRAM	
None		None		None		None		None	
Datum		23.11.84		H		H		H	
Brem		H		H		H		H	
Gap		H		H		H		H	
Norm		H		H		H		H	
LUCIUS & BAER		LUCIUS & BAER		LUCIUS & BAER		LUCIUS & BAER		LUCIUS & BAER	



Typenbezeichnung E 456	Hersteller LUCIUS & BAER
Teilenummer 18V-Videomonitor-Einheit	Zeichnung 29.11.81
Zeichnung 29.11.81	Zeichnung 29.11.81
Zeichnung 29.11.81	Zeichnung 29.11.81



E 456	18V - Videomonitor-Einheit
LUCIUS & BAER	



	Dat.	Name
Gez.	4.7.53	G. K. K. K.
Gepr.		
Norm.		
Masst.		



SUB/S

Zeich.-Nr. :

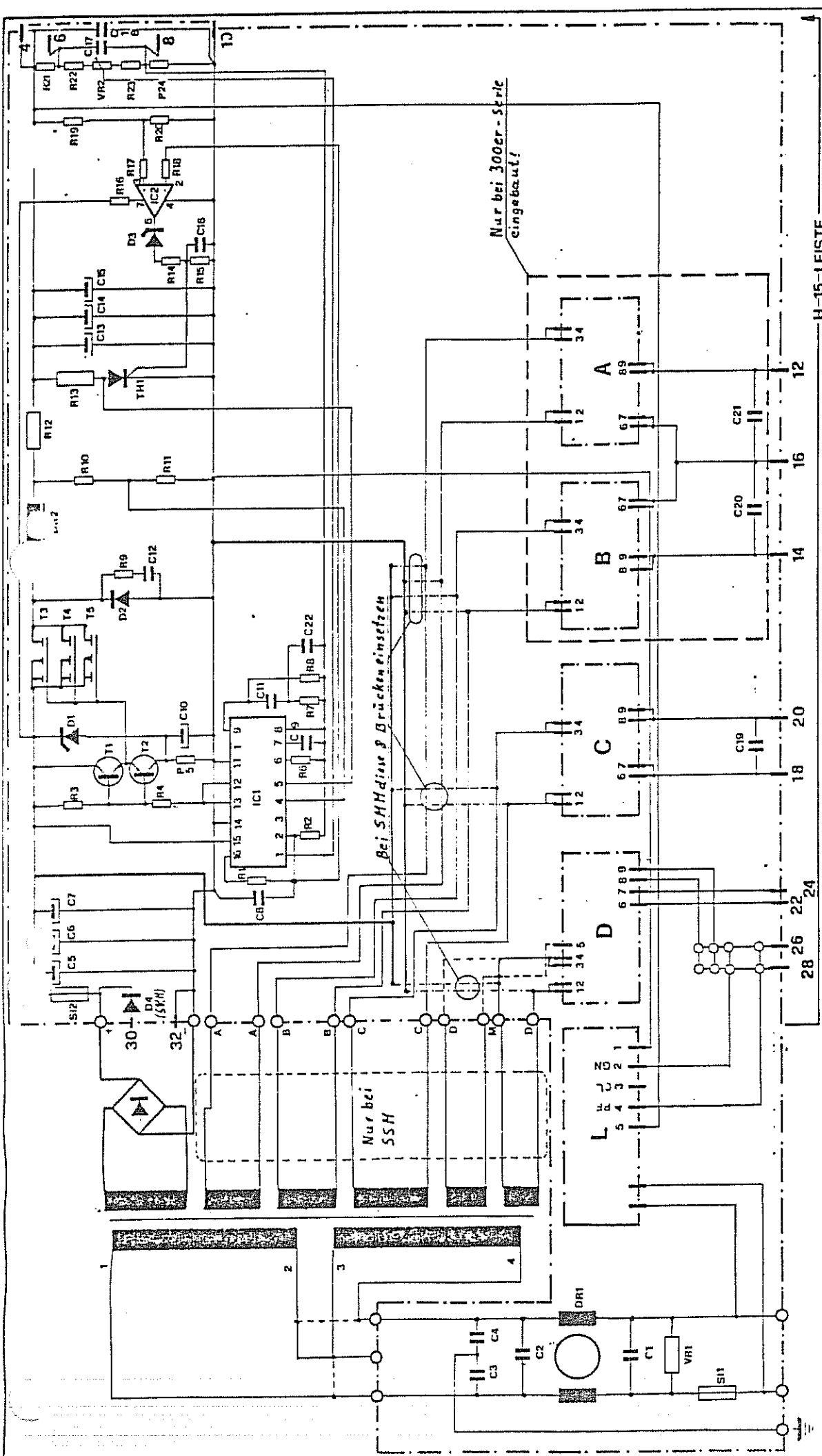
5 0 7 8 3 3 0 1 0 3

Erste Verwendung:

Kunde: STANDARD

Änd.-Ind.

Datum



H-15-LEISTE

		Zeich.-Nr.:	
		Erste Verwendung:	
SMM+SSM 220+300		Kunde:	
Dat.	Name		
Gez.	Gepr.		
Norm.	Massl.		

№	Dat.	Name
Gez.	4.7.83	Günther
Gepr.		
Norm.		
Masst.		

SUB/S



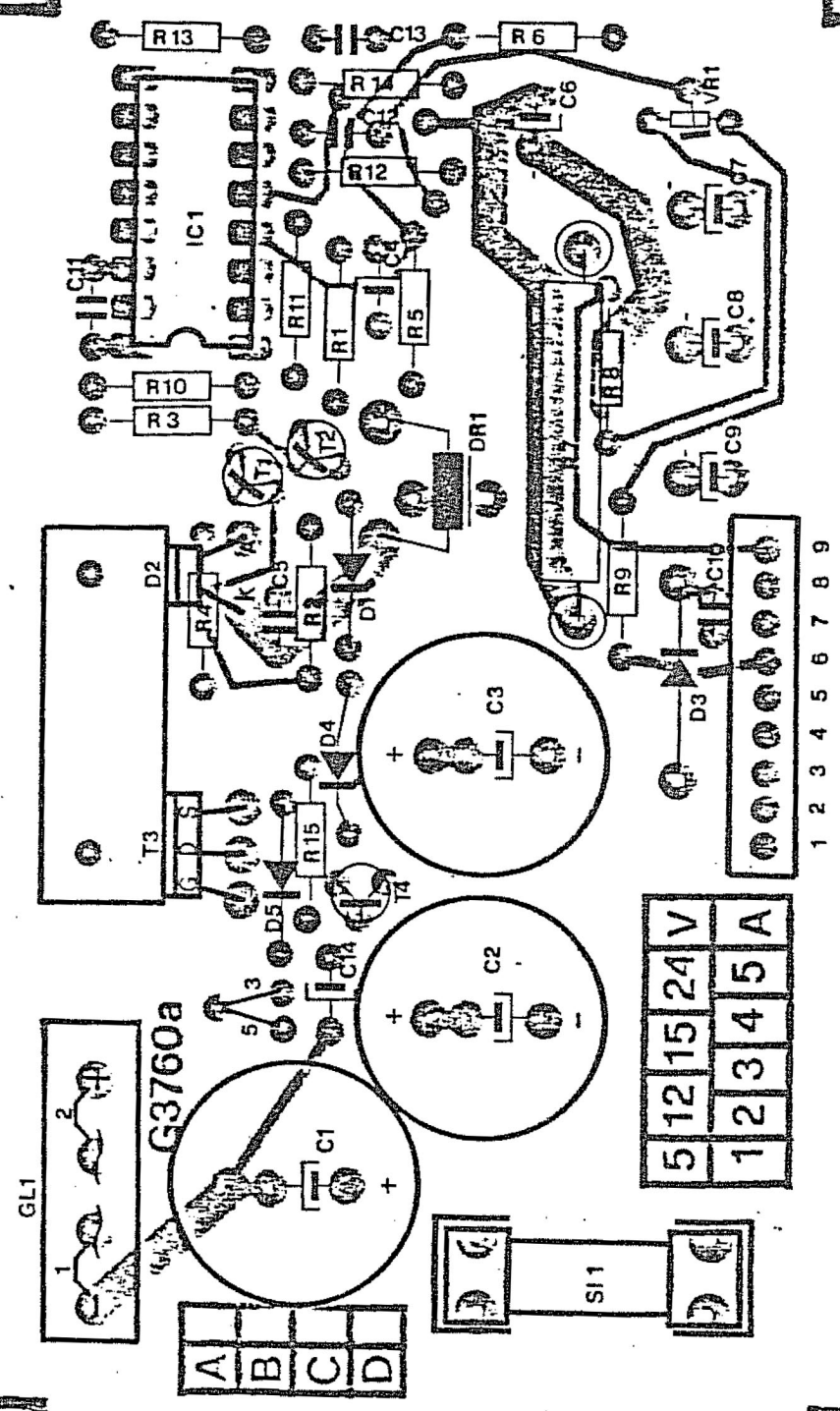
Zeich.-Nr. : D078330101

Erste Verwendung:

Kunde: STANDARD

Ind.-Ind.

--	--	--	--	--	--



POS.	EL.POS.	BENENNUNG:	SACHNUMMER:	LIEFERANTEN:
1	R1	Metallfilmwiderst	4,7 K Ω	
2	R2	"	4,7 K Ω	
3	R3	Kohleschichtwid.	4,7 K Ω	
4	R4	"	1 K Ω	
5	R5	"	4,7 K Ω	
6	R6	"	22 K Ω	
7	R7	"	1,5 K Ω	
8	R8	"	15 K Ω	
9	R9	"	18 Ω	
10	R10	"	120 Ω	
11	R11	"	10 K Ω	
12	R12	Drahtwiderstand	s. Liste	
13	R13	"	0,1 Ω / 5 W	
14	R14	Kohleschichtwid.	220 Ω	
15	R15	"	1 K Ω	
16	R16			
17	R17	"	47 K Ω	
18	R18	"	47 K Ω	
19	R19	Metallfilmwid.	1,58 K Ω	
20	R20	"	1 K Ω	
21	R21	Kohleschichtwid.	68 Ω	
22	R22	Metallfilmwid.	1 K Ω	
23	R23	"	1 K Ω	
24	R24	Kohleschichtwid.	18 Ω	
25	VR1	Varistor 250 VAC	250 VAC	
26	VR2	Spindeltrimmer	100 Ω	
27	C1	X - Kondensator	0,1 μ F / 250 V~	HPF
28	C2	X - Kondensator	0,1 μ F / 250 V~	HPF
29	C3	Y - Kondensator	2200 pF / 250 V	MP
30	C4	Y - Kondensator	2200 pF / 250 V	MP
31	C5	Elektrolyt - C	4700 μ F / 40 V	
32	C6	"	4700 μ F / 40 V	
33	C7	"	4700 μ F / 40 V	
34	C8	Vielschicht - Ker.	100 nF / 100 V	
35	C9	"	1 nF / 100 V	
36	C10	Tantal - Elko	10 μ F / 35 V	
37	C11	Vielschicht - Ker.	100 nF / 100 V	
38	C12	"	1 nF / 100 V	
39	C13	Elektrolyt - Kon.	1000 μ F / 25 V	
40	C14	"	1000 μ F / 25 V	
41	C15	"	220 μ F / 25 V	
42	C16	Vielschicht - Ker.	100 nF / 100 V	
43	C17	"	100 nF / 100 V	
44	C18	Vielschicht - Ker.	100 nF / 100 V	

83 Dat. Name

Gez. 7.7. Da

Gepr.

Norm.

Masst.



SMM SSM
Grundkarte

STÜCKLISTE NR : 1 v. 2

Erste Verwendung:

Kunde:

Änd.-Ind.

--	--	--	--	--

POS.	EL.POS.	BENENNUNG:	SACHNUMMER:	LIEFERANTEN:
45	C19	Vielschicht-Ker.C.	100nF / 100V	
46	C20	"	100nF / 100V	
47	C21	"	100nF / 100V	
48	C22	"	100nF / 100V	
49	D1	Zenerdiode	ZPD15	
50	D2	Schottkydiode	USD 945	
51	D3	Zenerdiode	ZPD3,3	
52	D4	Schottkydiode	USD 945	
53	T1	NPN-Transistor	BC 337	
54	T2	PNP-Transistor	BC 327	
55	T3	P-channel-Mos-FET	IRF 9531 (0)	
56	T4	" "	IRF 9531 (0)	
57	T5	" "	IRF 9531 (0)	
58	Thy 1	Thyristor	2N 4441	
59	IC1	Schaltregler	SG 3524 AN	
60	IC2	Operationsverst.	CA 741 CE	
61	DR1	Netzdrossel	BV 2113	
62	DR2	Speicherdrossel		
63	Si1	Netzsicherung	Si-Halter-stehend	
64	Si2	Sekundärsicher.	Si-Halter-liegend	
65	S1	Steckleiste 9-pol.	} f. Sub-Karten	
66	S2	"		
67	S3	"		
68	S4	"		
69	K1 1	3-pol. printbare	Lüsterklemme	
70	M1	Messerleiste, lötb.	H- 15	
71	K1	Kühlblock für	Pos. 50, 55, 56, 57	
72	F1	IC-Fassung 16-p.	f. Pos. 59	
73	F2	" 8-p.	f. Pos. 60	
74	F3	Si-Halter blank	f. Pos. 64 bei 220 -er Serie	
75	K2	Kühlkörper	f. Pos. 52	
76	S5	Steckerleiste 5-p.	f. Logikkarte	
77	S6	Steckerleiste 3-p.	mit entferntem	Mittelpol f. Logikkarte
78	Pr1	Print	(Gimmy-Nr. G 37 61 b)	

83	Dat.	Name
Gez.	7.7.	Da
Gepr.		
Norm.		
Masst.		



electric GMBH

SMM + SSM
Grundkarte

STÜCKLISTE NR : 2 v. 2

Erste Verwendung:

Kunde:

Änd.-Ind. | | | | |

POS.	EL.POS.	BENENNUNG:	SACHNUMMER:	LIEFERANTEN:
1	R 1	Kohlewiderstand	4,7KE 1/4 W	
2	R 2	"	4,7KE 1/4 W	
3	R 3	"	1KE 1/4 W	
4	R 4	"	18E 1/4 W	
5	R 5	"	18E 1/4 W	
6	R 6	"	10KE 1/4 W	
7	R 7	Drahtwiderstand	0,051E 7 W	
8	R 8	Metallfilmwid.	2,74KE 1/4 W	
9	R 9	"	6,34KE 1/4 W	
10	R10	"	4,7KE 1/4 W	
11	R11	"	4,7KE 1/4 W	
12	R12	Kohlewiderstand	10KE 1/4 W	
13	R13	siehe C 15		
14	R14	Kohlewiderstand	10KE 1/4 W	
15	R15	"	330E 1/4 W	
16	C 1	Elektrolyt-Kond.	2200pF	
17	C 2	-	-	
18	C 3	-	-	
19	C 4	Elektrolyt-Kond.	10pF -	
20	C 5	Keram.Schei.Kond.	1nF	
21	C 6	Elektrolyt-Kond.	47pF	
22	C 7	"	47pF	
23	C 8	"	47pF	
24	C 9	"	47pF	
25	C10	Vielsch.Ker.Kond.	1nF	
26	C11	"	100nF	
27	C12	Scheibenkond.	1nF	
28	C13	"	100nF	
29	C14	-	-	
30	C15	Scheibenkond.	22pF	
31	D 1	Zenerdiode	ZPD 15	
32	D 2	Fast-Recovery-Diode	USD 945	
33	D 3	Transzorbdiode	SICTE 18	
34	D 4	-	-	
35	D 5	Diode	1N4148	
36	VR 1	Trimpoti	500E	
37	GL 1	entfällt (ersetzt durch Brücken 1 + 2		
38	T 1	npn-Transistor	BC 337	
39	T 2	pnp-Transistor	BC 327	
40	T 3	p-channel FFT	RFP 12P08	
41	DR 1	Drossel	15V2A	
42	ST 1	Steckleiste 9 pol.		
43	SVB/S	Leiterkarte SVB/S	G3760b	
44	K 1	Kühlblock	D2 u. t3	
45	SI 1	entfällt (extern)		

	Dat.	Name
Gez.		
Gep.		
Norm.		
Masst.		



SUB/S 152

STÜCKLISTE NR :

L 0 78330102

Erste Verwendung:

Kunde: Standard

Änd.-Ind.

Datum

POS.	EL.POS.	BENENNUNG:	SACHNUMMER:	LIEFERANTEN:
1	R1	Kohlewiderstand	4,7 KE / 1/4 W	
2	R2	"	1,5 KE / 1/4 W	
3	R3	"	3,3 KE / 1/4 W	
4	R4	"	18 E / 1/4 W	
5	R5	"	68 E / 1/4 W	
6	R6	"	10 KE / 1/4 W	
7	R7	Drahtwiderstand	0,1 E / 1/4 W	
8	R8	Metallfilmwider.	9,1 KE / 1/4 W	
9	R9	"	10 KE / 1/4 W	
10	R10	"	4,7 KE / 1/4 W	
11	R11	"	"	
12	R12	Kohlewiderstand	10 KE / 1/4 W	
13	R13	siehe C 15(Pos. 30)		
14	R14	Kohlewiderstand	4,7 KE / 1/4 W	
15	R15	"	5,1 KE / 1/4 W	
16	C1	Elektrolyt-Kond.	470 uF/63 V	
17	C2	"	" "	
18	C3	"	" "	
19	C4	"	2,2 uF/50 V	
20	C5	Keram. Scheib. Kond.	1 nF	
21	C6	Elektrolyt-Kond.	47 uF/35 V	
22	C7	"	" "	
23	C8	"	" "	
24	C9	"	" "	
25	C10	Viels. Ker. Kond.	100 nF	
26	C11	"	"	
27	C12	Scheibenkondens.	1 nF	
28	C13	"	22 nF	
29	C14	Elektrolyt-Kond.	10uF / 35 V	
30	C15	Scheibenkondens.	220pF (ersetzt R13)	
31	D1	Zenerdiode	ZPD 15	
32	D2	Fast-Recovery-Diode	ESM 182 50 R	
33	D3	Transordiode	SICTE 22	
34	D4	Zenerdiode	ZPD 30	
35	D5	Diode	1 N 4148	
36	YR1	Trimpoti	100 E	
37	GL1	Entfällt (ersetzt durch Brücken 1 & 2)		
38	T1	npn-Transistor	BC 337-25	
39	T2	pnp-Transistor	BC 327-25	
40	T3	p-channel FFT	IRF 9531 od. Äquiv.	
41	DR1	Drossel	24 V / 5A	
42	ST1	Steckleiste 9-pol.		
43	SVB/S	Leiterkarte SVB/S	G 3760b	
44	K1	Kühlblock	D2 u. t3	
45	SI1	entfällt (extern)		

	Dat.	Name
Gez.	4.7.	Günth
Gepr.		
Norm.		
Masst.		



electric GMBH

SUB/S244

STÜCKLISTE NR :

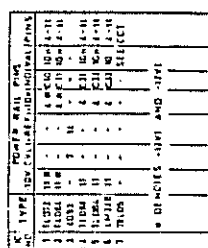
L o 78330102

Erste Verwendung:

Kunde: STANDARD

Änd.-Ind.

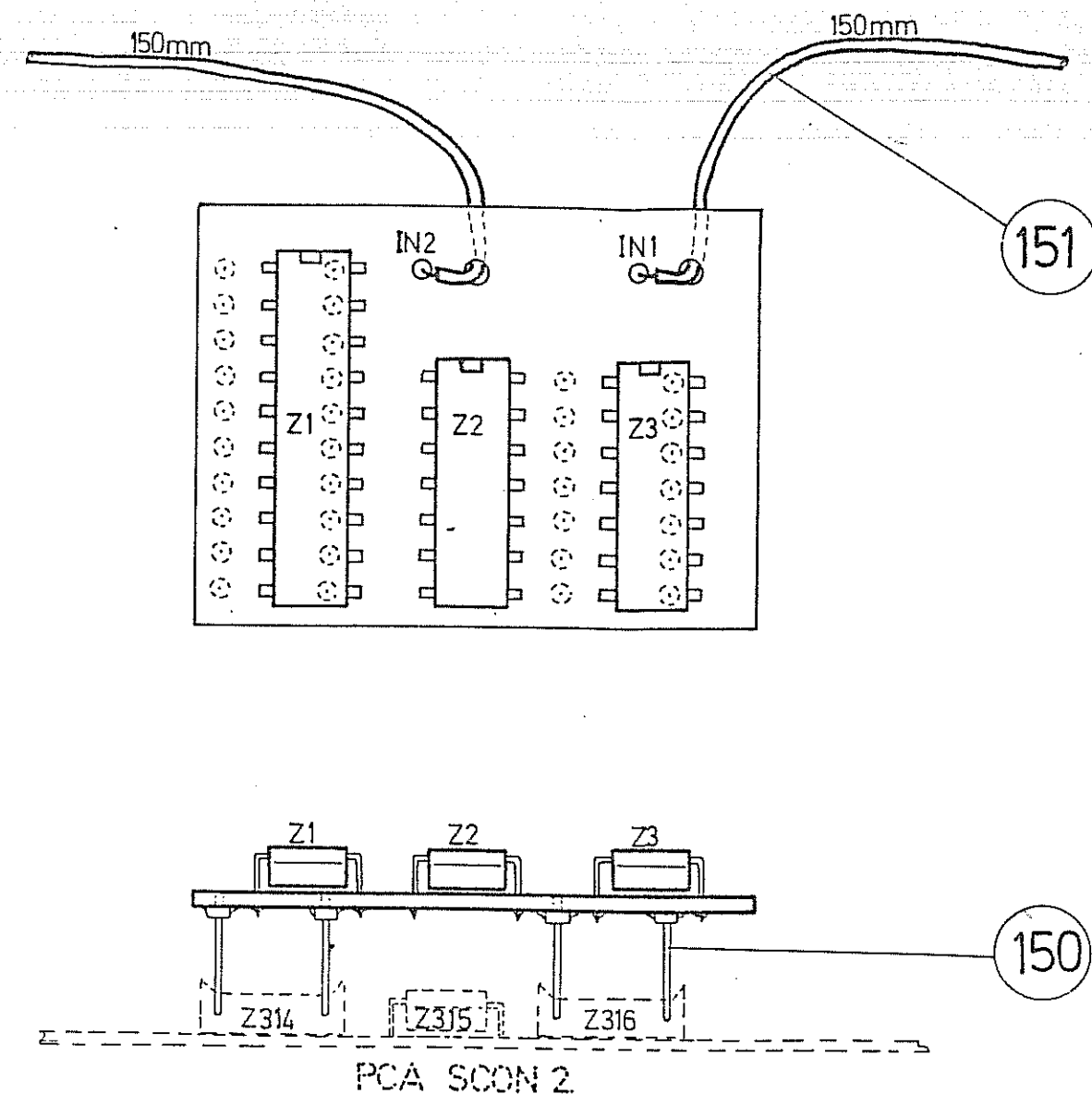
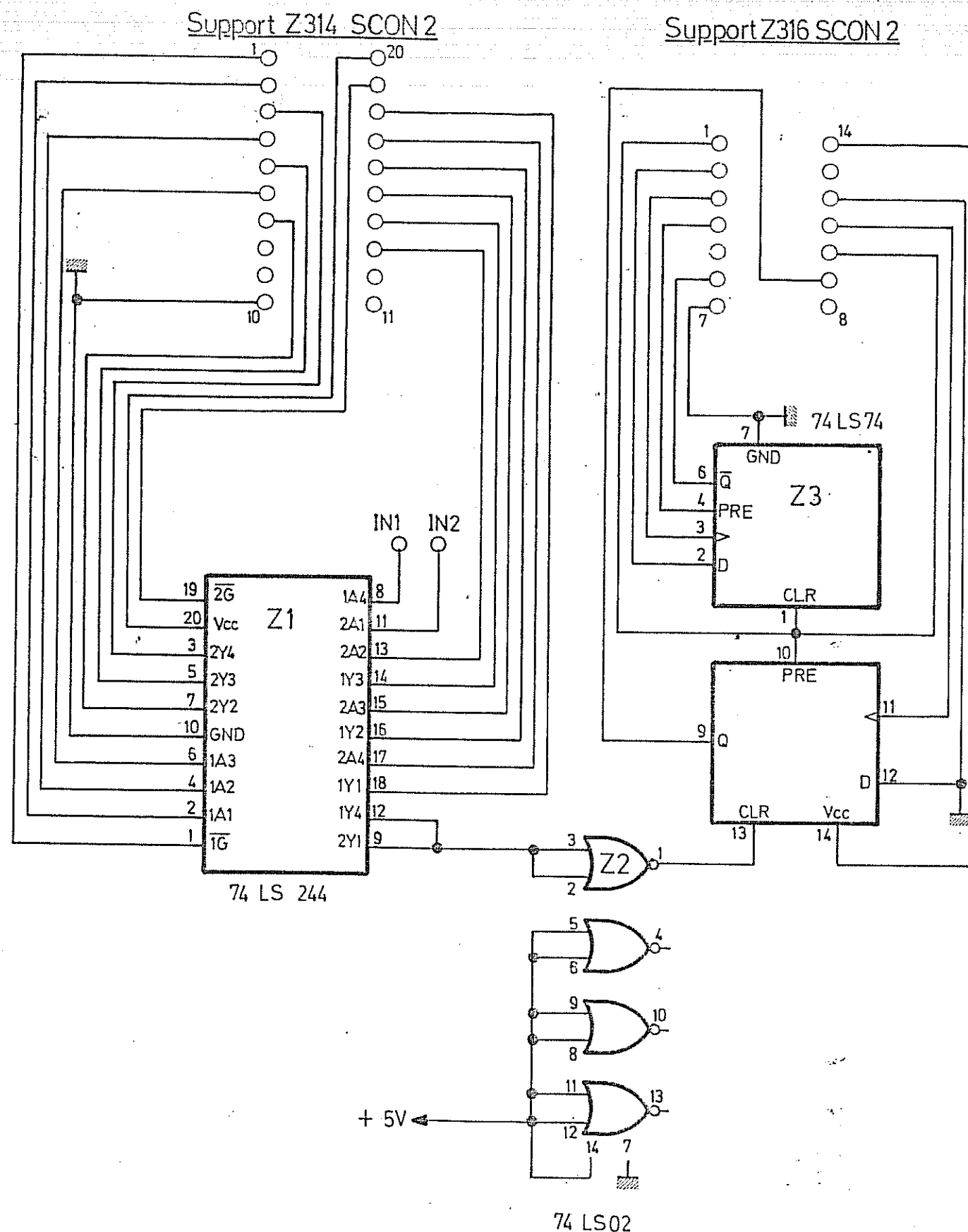
Datum



2



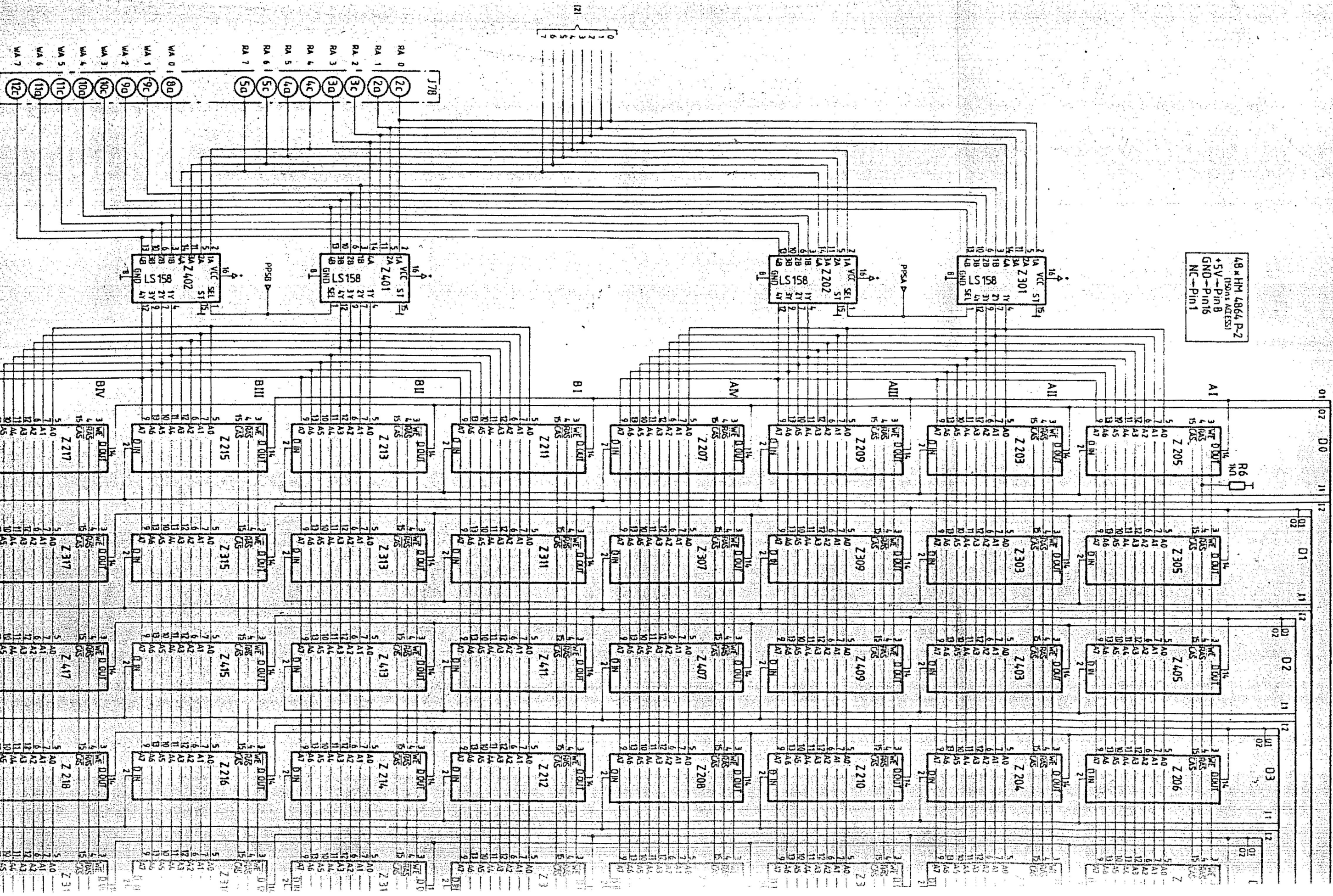
Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite



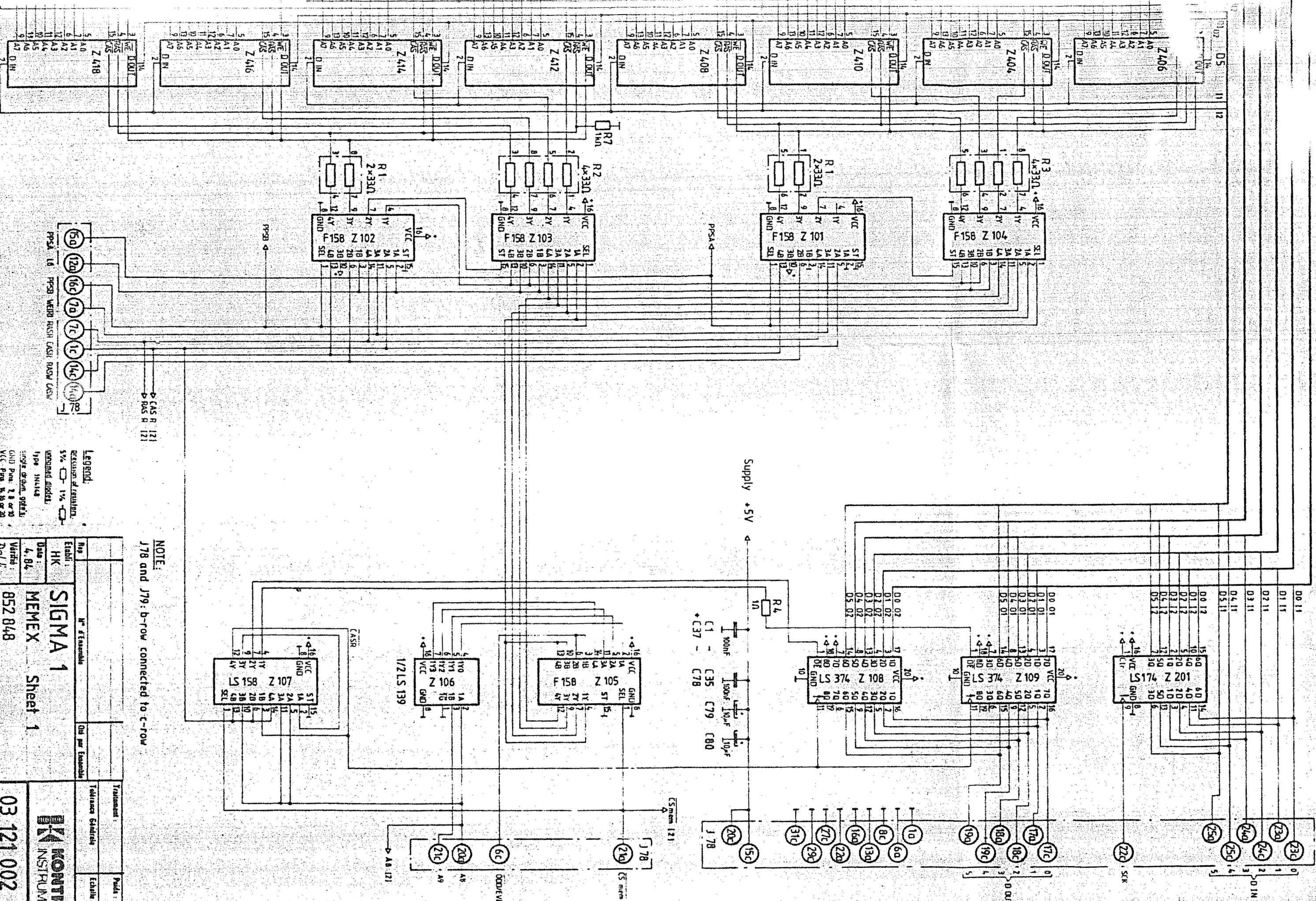
Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
			Traitement	Poids
			Tolérance Générale	Echelle 2/1
Date : 26.01.87 Vérifié : 10.01.87 PCA MODIF SCON 2 872 644			KONTRON INSTRUMENTS 03_121B3.1.1 4 02 08 97	
Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite			Edi.	Date

MODIFICATIONS 08/01/87 par 10.01.87 Valid. le 22.87. G.R.D.

48 * HM 4864 P-2
(180ns ACCESS)
+5V - Pin B
GND - Pin 16
NC - Pin 1



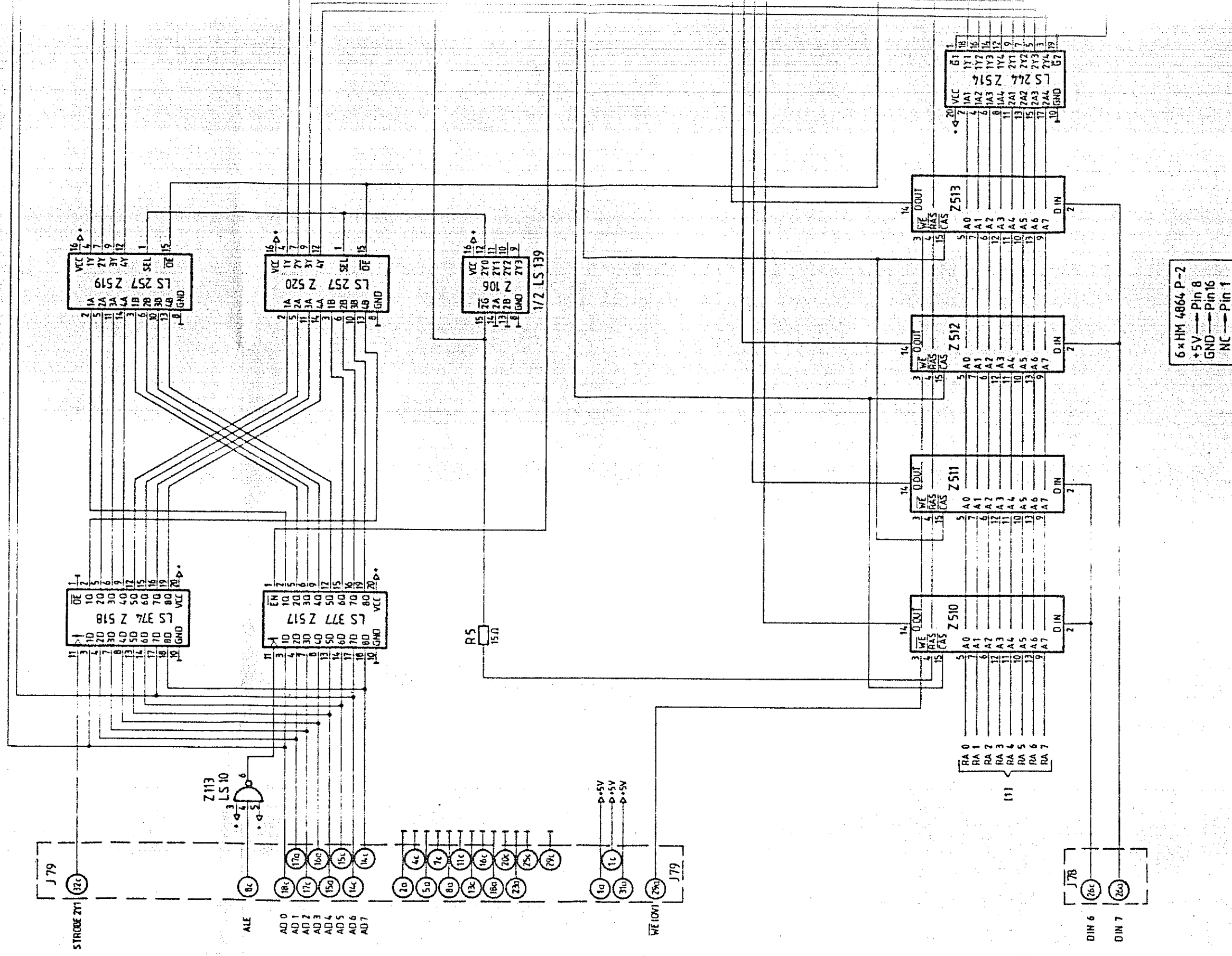
Bitte beachten, dass die Datenblätter von Intelschaltungen und andere geeignete
Literatur und Daten, ohne unsere schriftliche Genehmigung, auf keine Art und Weise
in irgendeiner Form oder durch irgendwelche Mittel, elektronisch oder mechanisch,
reproduziert, vervielfältigt oder weiterverbreitet werden dürfen. Die Schaltung
darstellt eine typische Schaltung und ist nicht als verbindliche Spezifikation zu verstehen.



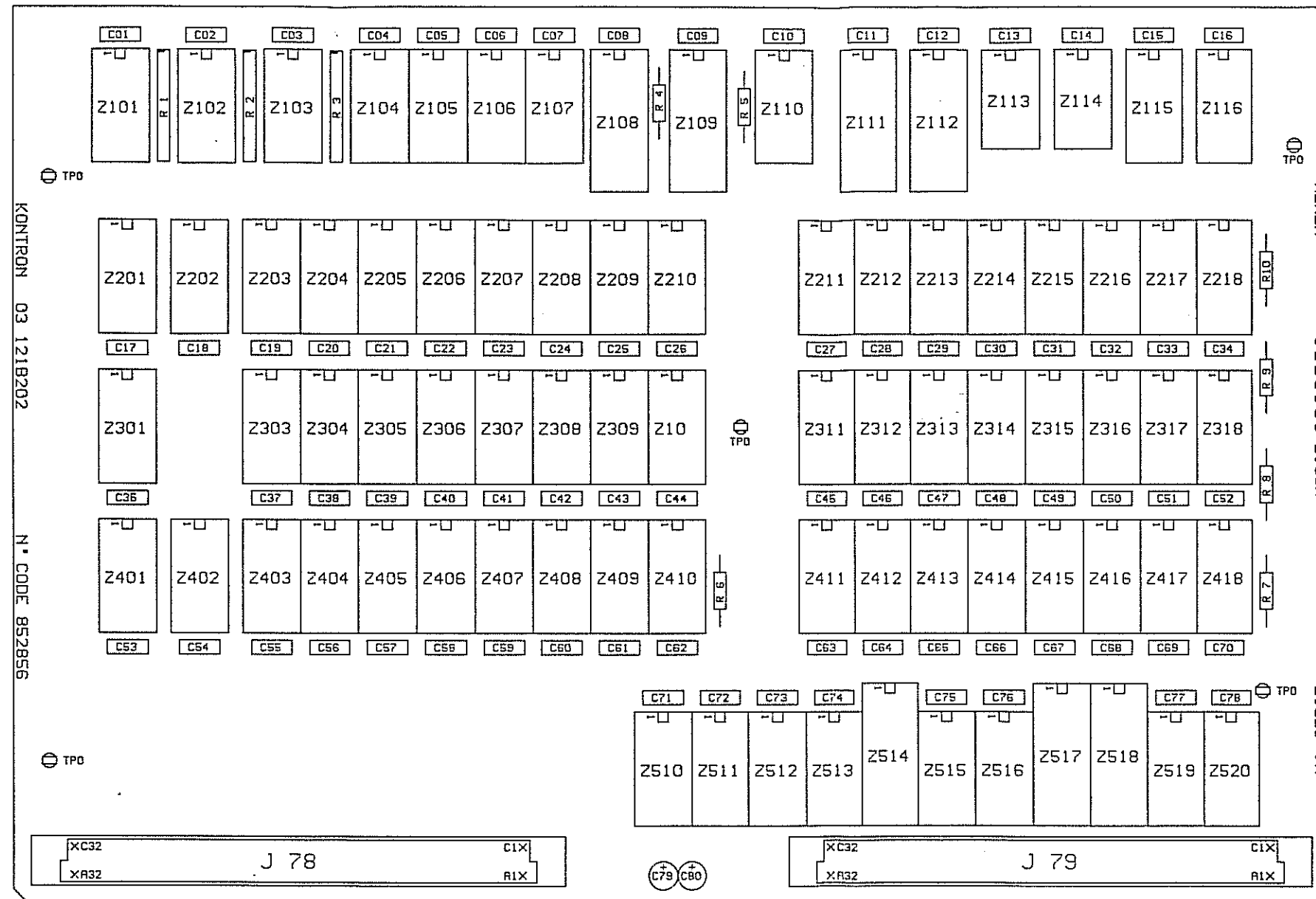
NOTE:
J78 and J79: b-row connected to c-row

Legend:
RESISTOR & CAPACITOR:
5% □ 1% □
UNTERMINATED ALUMINUM:
TYPE INITIALS
SINGLE ORIGIN, 90°E3,
GND Pins 1, 8 or 70
VCC Pins 16, 30 or 20

Ref	N° d'ensemble	Qte par Ensemble	Transmis	Paids
1	SIGMA 1			
2	MEMEX			
3	Sheet 1			
4	852 848			
5	03 121 002			
6	2			
7	6.96			



IMPLANTATION MEMEX



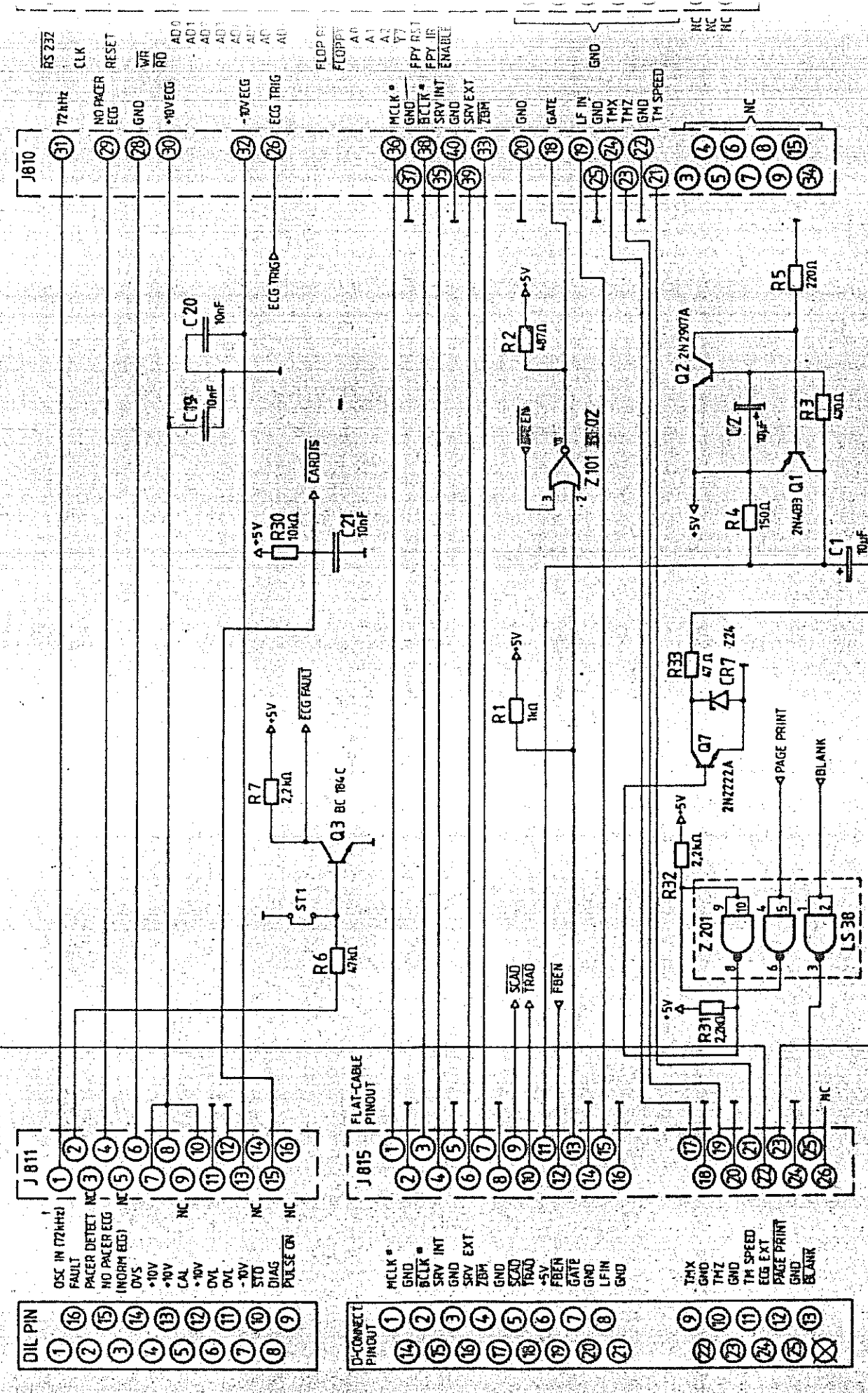
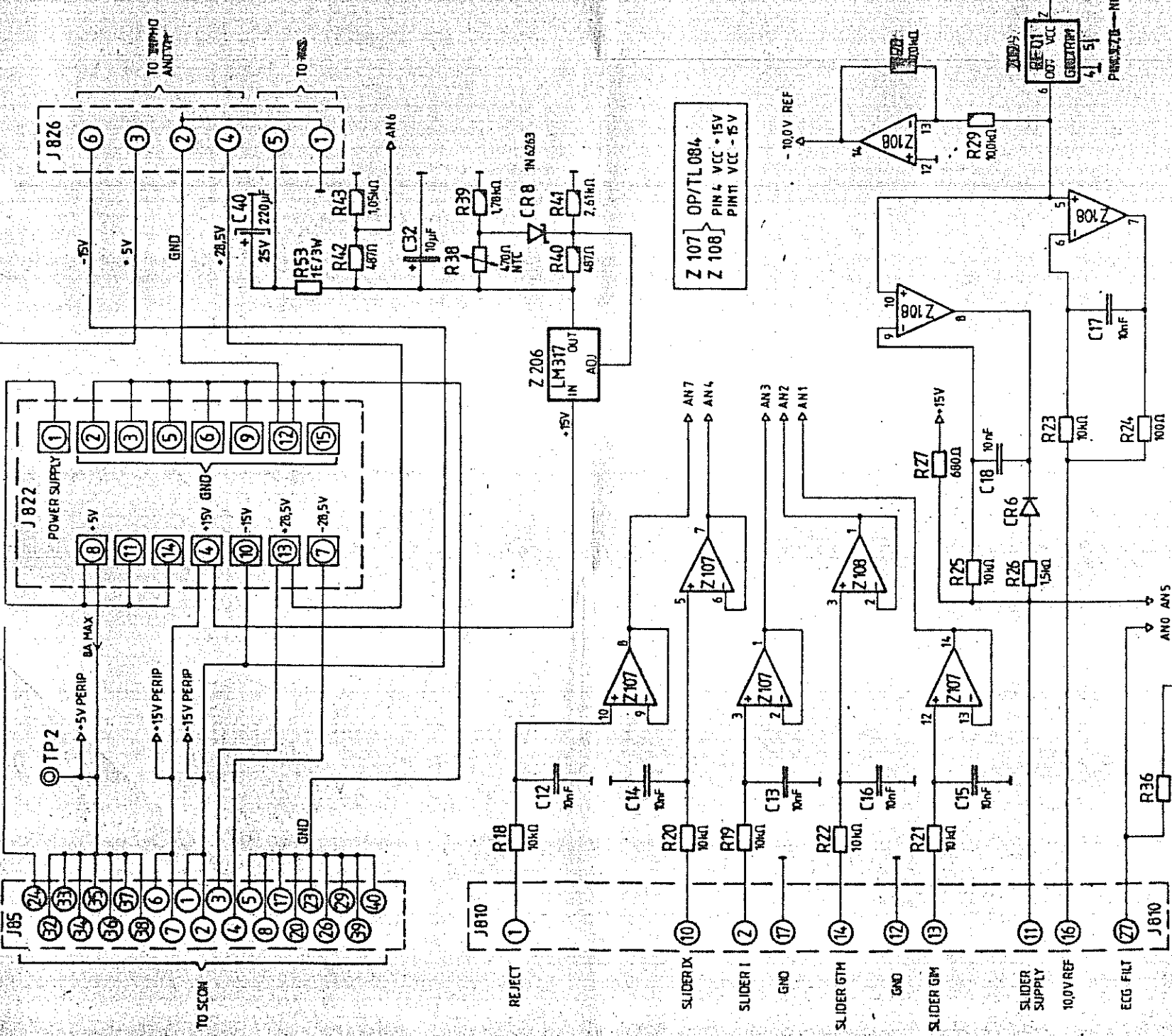
2 colonnettes M 3x10
(Aposer qu'après passage sur testeur)

Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
			Traitement	Poids
			Tolérance Générale	Echelle 1/1
Etabli: SIGMA 1			KONTRON INSTRUMENTS 03-121B302 2 27.11.86 Edi. Date	
Date: 27.2.85	PCA MEMEX			
Vérifié: 12.05.86	implantation 852 848			

MODIFICATIONS ① Valable le 8.3.85. ② Valable le 27.11.86. ③

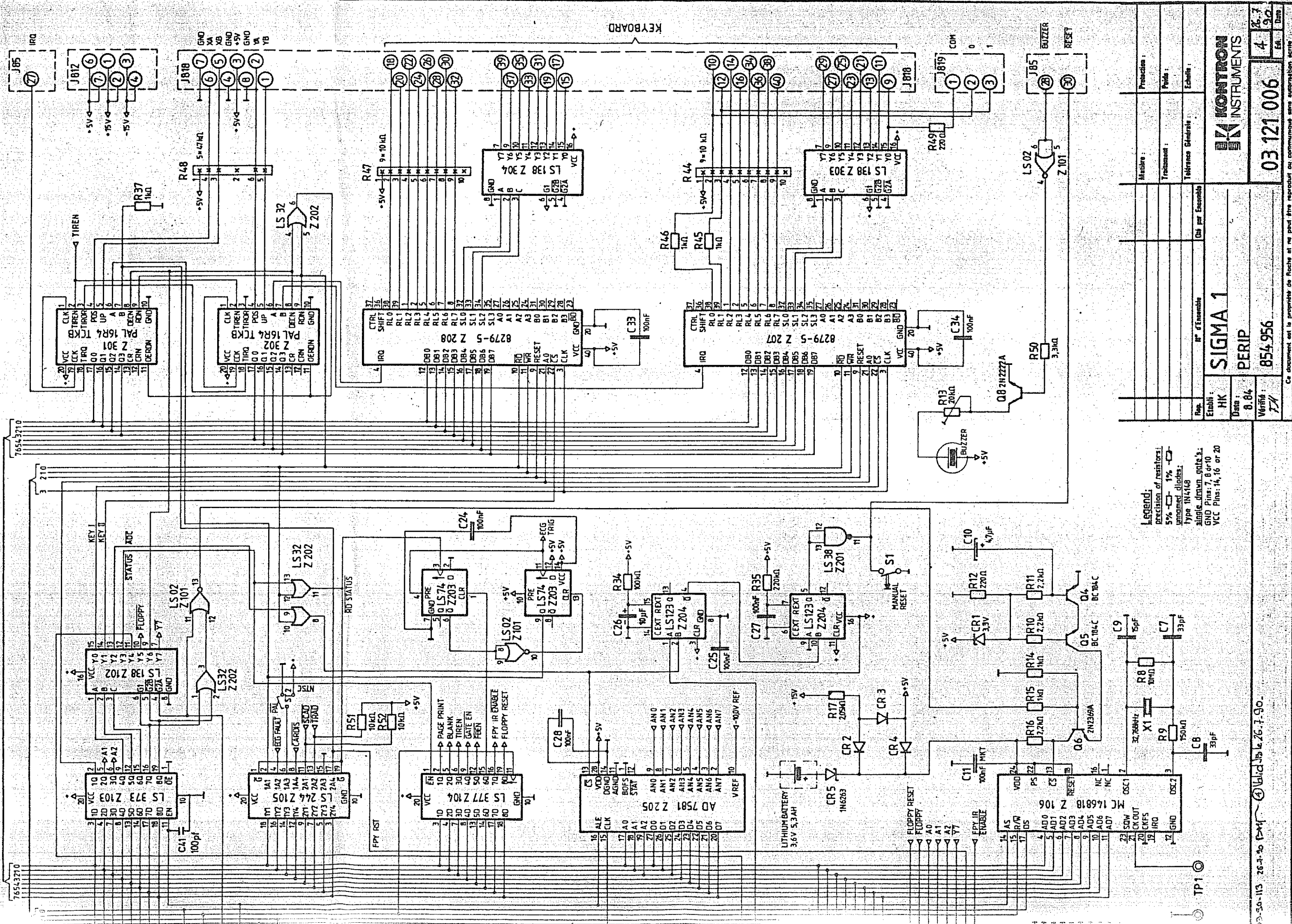
DECOUPLING CAPACITORS

Z 101	C3 100nF
Z 102	C4 100nF
Z 103	C5 100nF
Z 104	C6 100nF
Z 105	C7 100nF
Z 106	C8 100nF
Z 107	C9 100nF
Z 108	C10 100nF
Z 109	C11 100nF
Z 110	C12 100nF
Z 111	C13 100nF
Z 112	C14 100nF
Z 113	C15 100nF
Z 114	C16 100nF
Z 115	C17 100nF
Z 116	C18 100nF
Z 117	C19 100nF
Z 118	C20 100nF
Z 119	C21 100nF
Z 120	C22 100nF
Z 121	C23 100nF
Z 122	C24 100nF
Z 123	C25 100nF
Z 124	C26 100nF
Z 125	C27 100nF
Z 126	C28 100nF
Z 127	C29 100nF
Z 128	C30 100nF
Z 129	C31 100nF
Z 130	C32 100nF
Z 131	C33 100nF
Z 132	C34 100nF
Z 133	C35 100nF
Z 134	C36 100nF
Z 135	C37 100nF
Z 136	C38 100nF
Z 137	C39 100nF
Z 138	C40 100nF
Z 139	C41 100nF
Z 140	C42 100nF
Z 141	C43 100nF
Z 142	C44 100nF
Z 143	C45 100nF
Z 144	C46 100nF
Z 145	C47 100nF
Z 146	C48 100nF
Z 147	C49 100nF
Z 148	C50 100nF
Z 149	C51 100nF
Z 150	C52 100nF
Z 151	C53 100nF
Z 152	C54 100nF
Z 153	C55 100nF
Z 154	C56 100nF
Z 155	C57 100nF
Z 156	C58 100nF
Z 157	C59 100nF
Z 158	C60 100nF
Z 159	C61 100nF
Z 160	C62 100nF
Z 161	C63 100nF
Z 162	C64 100nF
Z 163	C65 100nF
Z 164	C66 100nF
Z 165	C67 100nF
Z 166	C68 100nF
Z 167	C69 100nF
Z 168	C70 100nF
Z 169	C71 100nF
Z 170	C72 100nF
Z 171	C73 100nF
Z 172	C74 100nF
Z 173	C75 100nF
Z 174	C76 100nF
Z 175	C77 100nF
Z 176	C78 100nF
Z 177	C79 100nF
Z 178	C80 100nF
Z 179	C81 100nF
Z 180	C82 100nF
Z 181	C83 100nF
Z 182	C84 100nF
Z 183	C85 100nF
Z 184	C86 100nF
Z 185	C87 100nF
Z 186	C88 100nF
Z 187	C89 100nF
Z 188	C90 100nF
Z 189	C91 100nF
Z 190	C92 100nF
Z 191	C93 100nF
Z 192	C94 100nF
Z 193	C95 100nF
Z 194	C96 100nF
Z 195	C97 100nF
Z 196	C98 100nF
Z 197	C99 100nF
Z 198	C100 100nF



① MODIF. 4.6.86 NEW CONNECTION R30 C21 J810/34 TO J018/15 ② MODIF. 25.7.86 ECG/INTGOL ③ MODIF. 4.12.86 CONNECTION Z302/9 AND J05/13

Diese Zeichnung darf ohne unsere Genehmigung nicht zur Herstellung verwendet werden, Kopiert, vervielfältigt oder Dritten zugänglich gemacht werden.



Legend:
Precision of resistors:
5% - □ - 1% - □
unmarked diodes:
type IN4148
single drawn gate 1:
GND Pins: 7, 8 or 10
VCC Pins: 14, 16 or 20

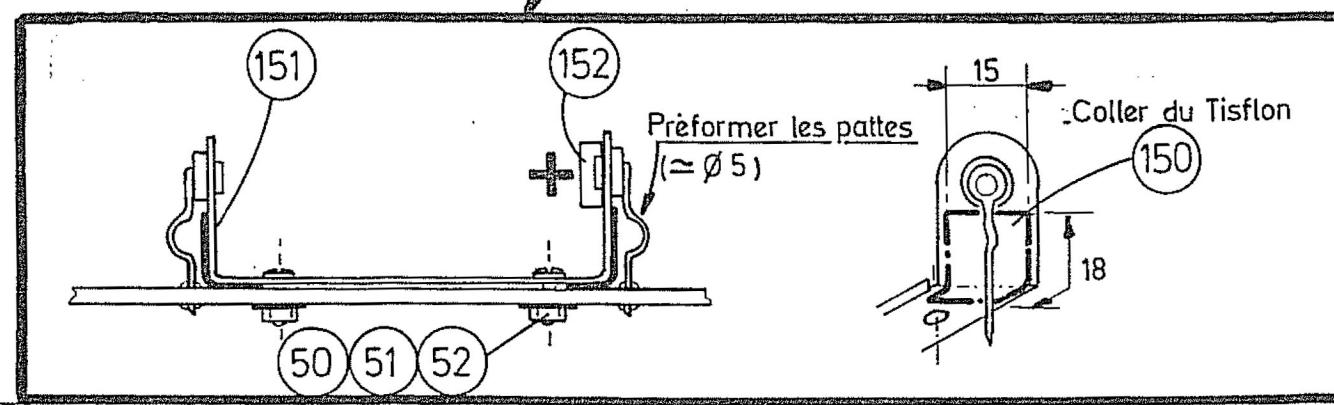
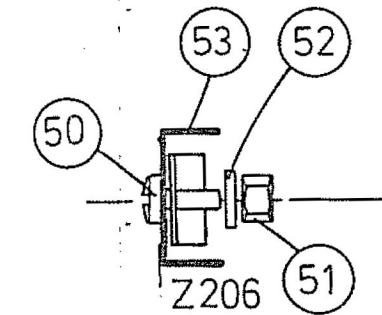
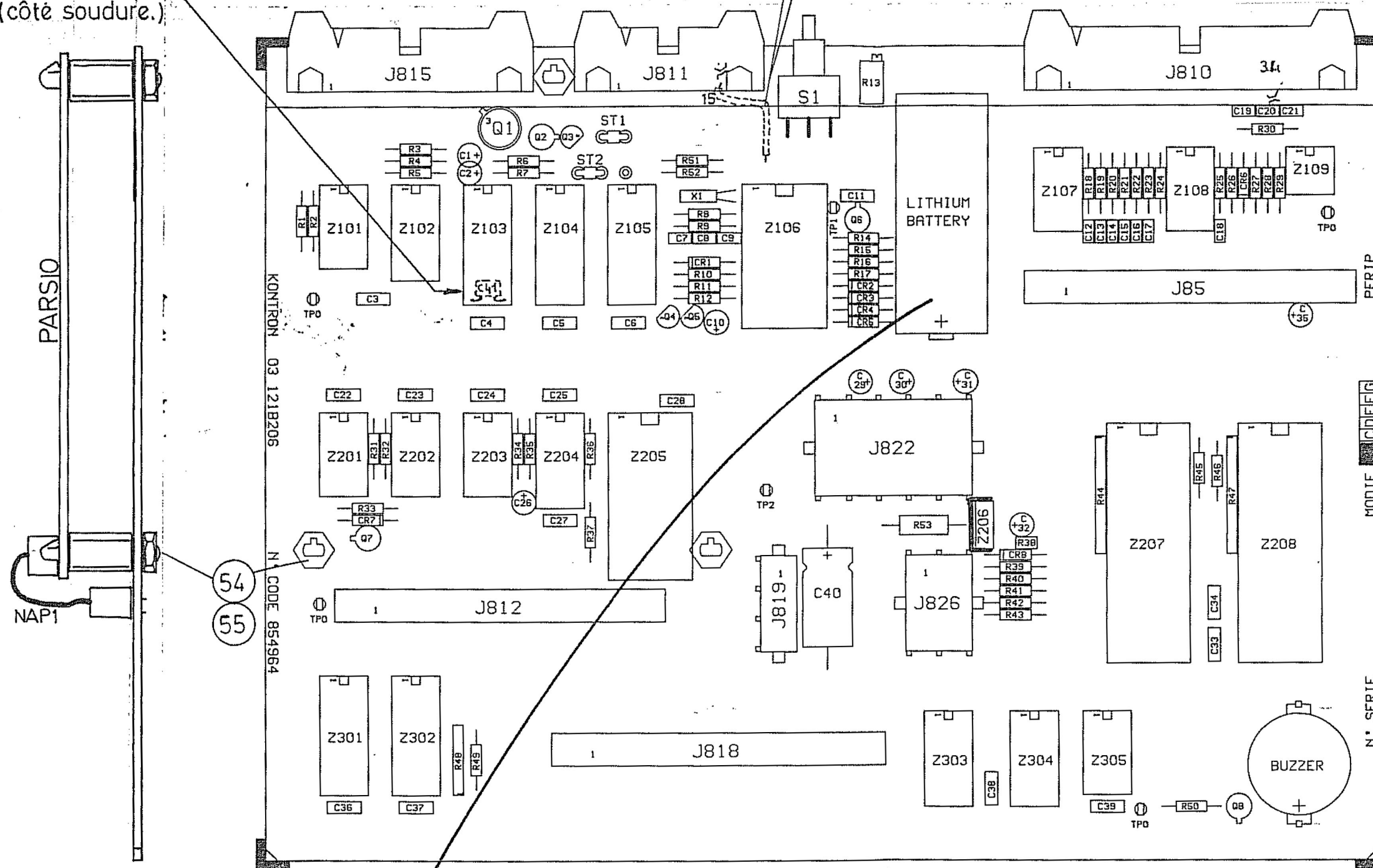
Page:		R° d'Ensemble		Dis par Ensemble		Matériau:		Protection:	
Établi:		HK		Sigma 1		Traitement:		Poids:	
Data:		0.84		PERIP		Télétrance Générale:		Echelle:	
Vérifié:		T/H		854.956		03 121 006		4 8.7	
Date:									

KONTRON
INSTRUMENTS

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite.

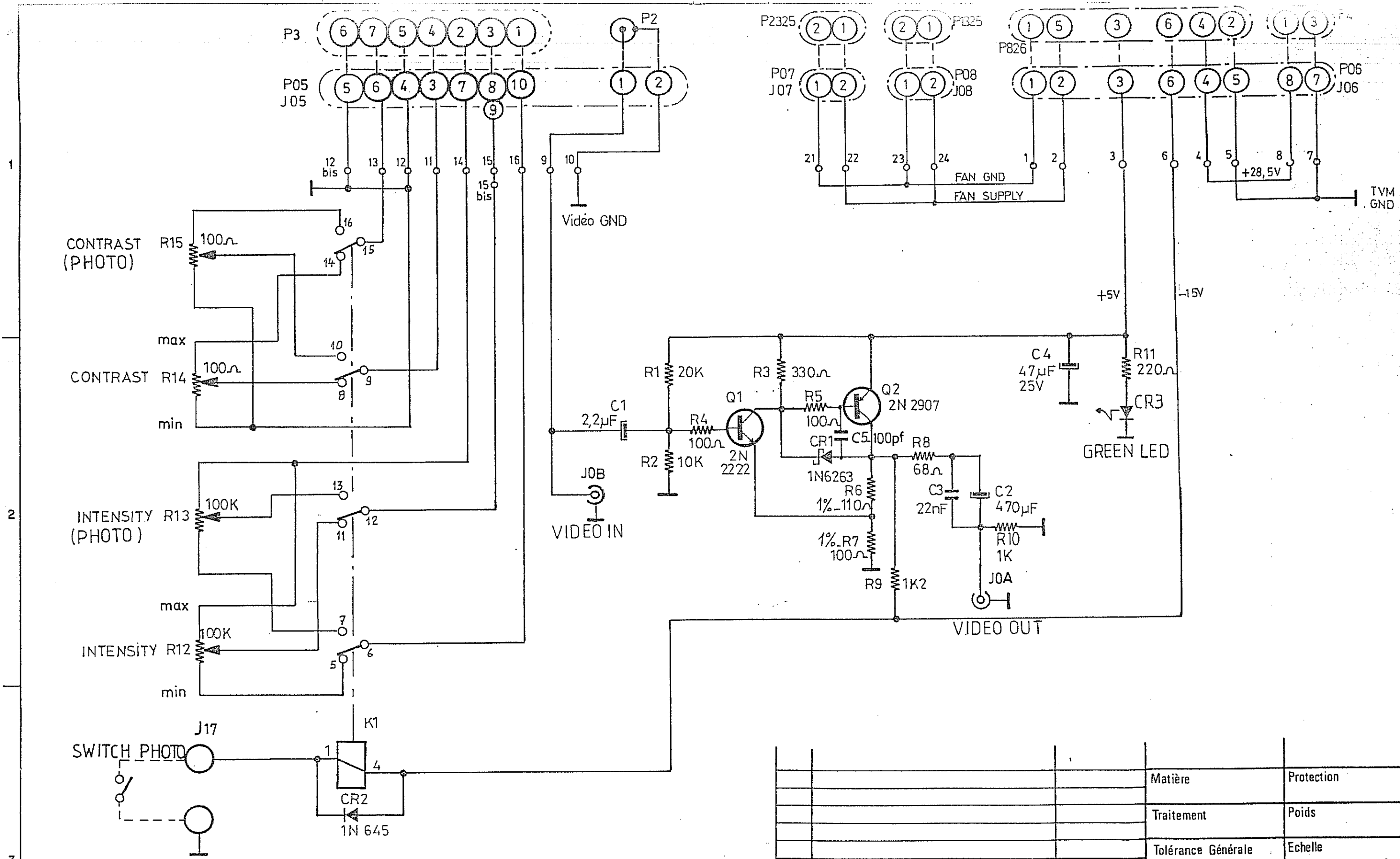
* Souder C41 entre
10 et 11 de Z103
(côté soudure.)

Souder un fil coté soudure entre
le 15 de J811 et la traversée (8 de Z105)



Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli : JF - T	SIGMA 1		Traitement	Poids
Date : 5.12.85	PCA PERIP		Tolérance Générale	Echelle
Vérifié : A. J. B.	854956			
			03-121B306	9 19.7 91 Edi. Date

1) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 2) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 3) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 4) Validé le 30.7.86
 5) Validé le 19.7.91
 6) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 7) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 8) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 9) Validé le 30.7.86
 10) Validé le 19.7.91
 11) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 12) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 13) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 14) Validé le 30.7.86
 15) Validé le 19.7.91
 16) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 17) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 18) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 19) Validé le 30.7.86
 20) Validé le 19.7.91
 21) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 22) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 23) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 24) Validé le 30.7.86
 25) Validé le 19.7.91
 26) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 27) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 28) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 29) Validé le 30.7.86
 30) Validé le 19.7.91
 31) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 32) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 33) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 34) Validé le 30.7.86
 35) Validé le 19.7.91
 36) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 37) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 38) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 39) Validé le 30.7.86
 40) Validé le 19.7.91
 41) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 42) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 43) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 44) Validé le 30.7.86
 45) Validé le 19.7.91
 46) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 47) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 48) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 49) Validé le 30.7.86
 50) Validé le 19.7.91
 51) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 52) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 53) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 54) Validé le 30.7.86
 55) Validé le 19.7.91
 56) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 57) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 58) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 59) Validé le 30.7.86
 60) Validé le 19.7.91
 61) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 62) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 63) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 64) Validé le 30.7.86
 65) Validé le 19.7.91
 66) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 67) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 68) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 69) Validé le 30.7.86
 70) Validé le 19.7.91
 71) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 72) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 73) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 74) Validé le 30.7.86
 75) Validé le 19.7.91
 76) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 77) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 78) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 79) Validé le 30.7.86
 80) Validé le 19.7.91
 81) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 82) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 83) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 84) Validé le 30.7.86
 85) Validé le 19.7.91
 86) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 87) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 88) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 89) Validé le 30.7.86
 90) Validé le 19.7.91
 91) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 92) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 93) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 94) Validé le 30.7.86
 95) Validé le 19.7.91
 96) Validé le 17.7.90 - FA) de N° 03-90-113 25.7.90 par 1) Validé le 26.7.90. 8A) 0390216 17/7/91
 97) Validé le 13.1.87 - FA) de N° 03-90-99 par 16.07.90
 98) Validé le 31.01.86 - RL - FA) Modif 15 de 3811 et 34 de 3810 3/7/86
 99) Validé le 30.7.86
 100) Validé le 19.7.91

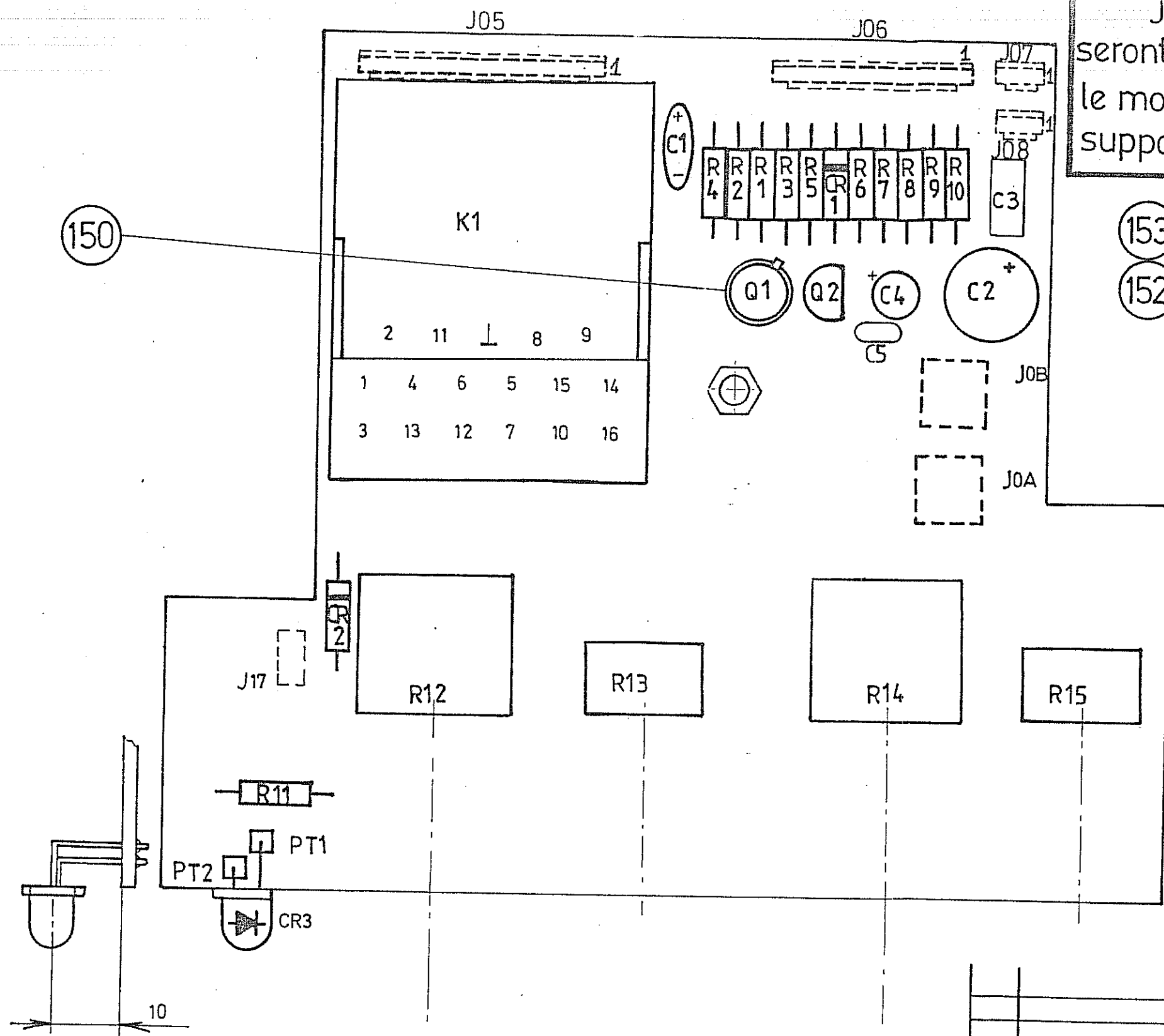


Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli:	SIGMA 1		Traitement	Poids
H.M.	PCA COMPHO		Tolérance Générale	Echelle
Date :	6-7-84		ROCHE bioélectronique KONTRON	
Vérifié:	schema 854 786		03_120B005	
Ce document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite			Edi. Dat	

1

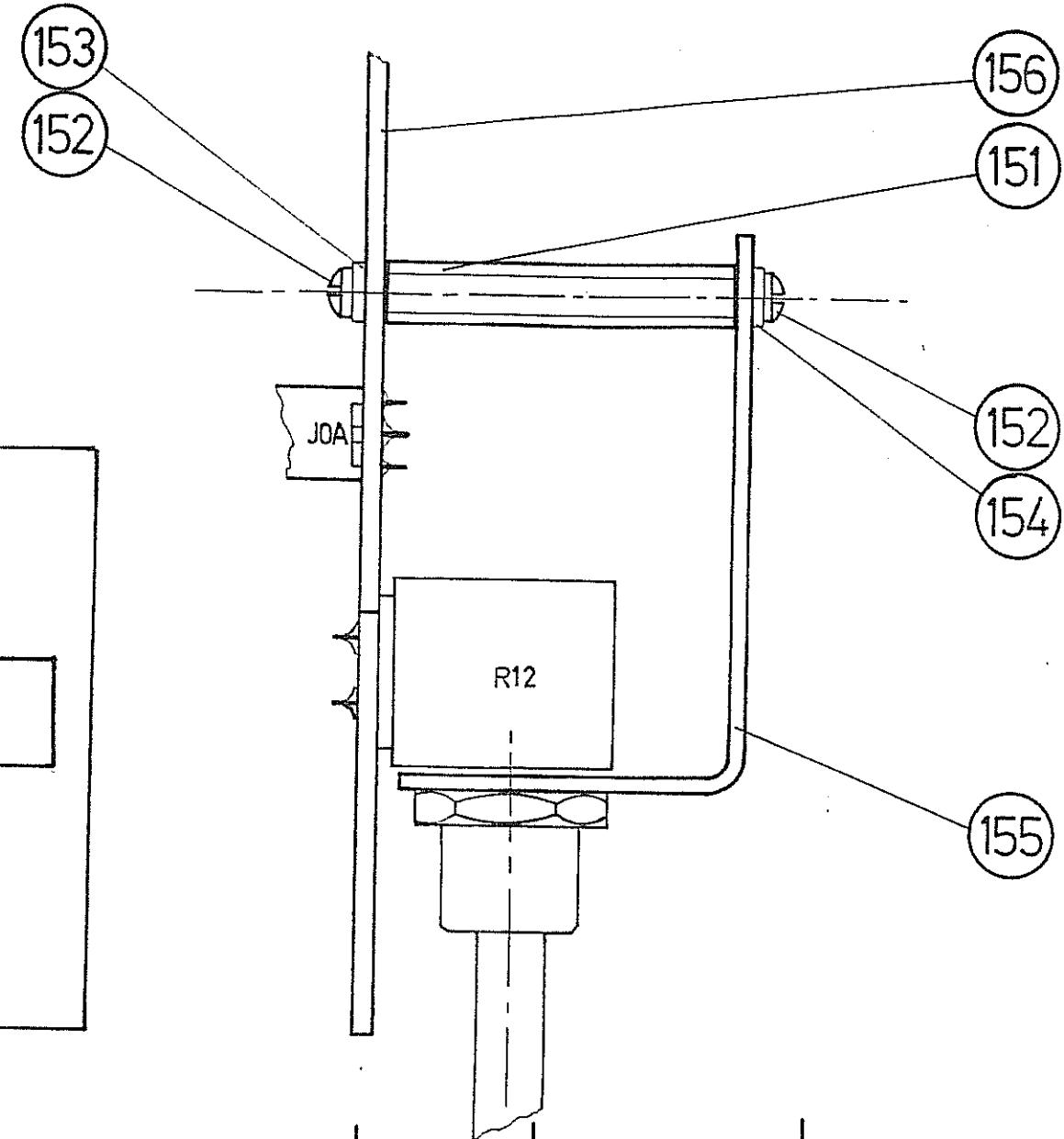
2

3



J17.J0A.J0B
seront soudés avant
le montage du
support (155).

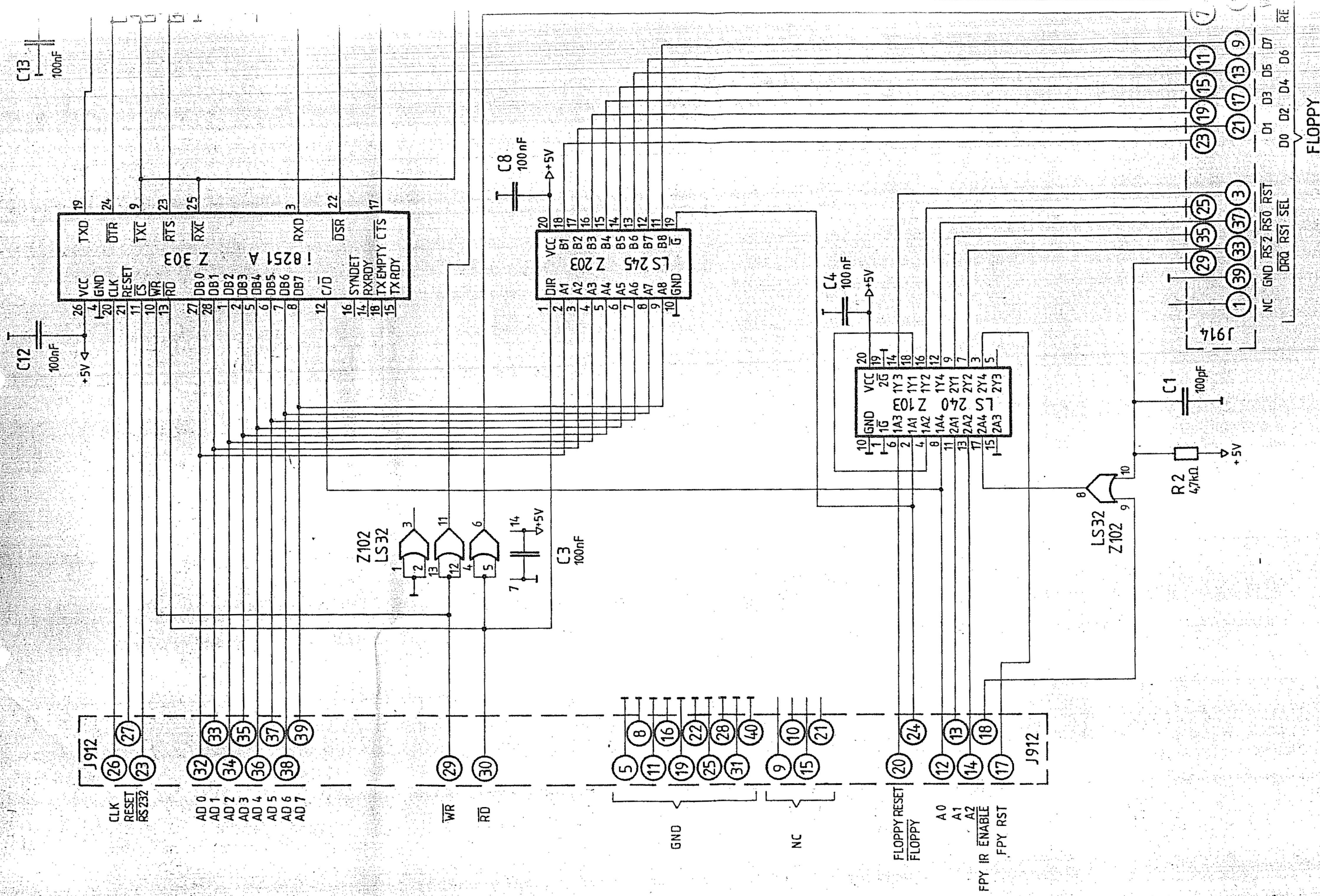
R12.R13.R14.R15
seront montés sur leur
support (155) avant d'être
soudés sur le c.i.



MODIFICATIONS Validé le 14.2.85 1A) J23 Supprimé 27/02/85 2) Validé le 5.3.85 2A) NC 11003-86-30-6/587 BMY
54 9002

Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
			Traitement	Poids
			Tolérance Générale	Echelle 2/1
Etabli : <u>[Signature]</u> Date : <u>3-10-84</u> Vérifié : <u>[Signature]</u>			ROCHE bioélectronique KONTRON	
SIGMA 1 PCA COMPHO implantation 854 786			03-1 20B305 <u>3</u> 26.5 87 Edi. Date	

Ce document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite

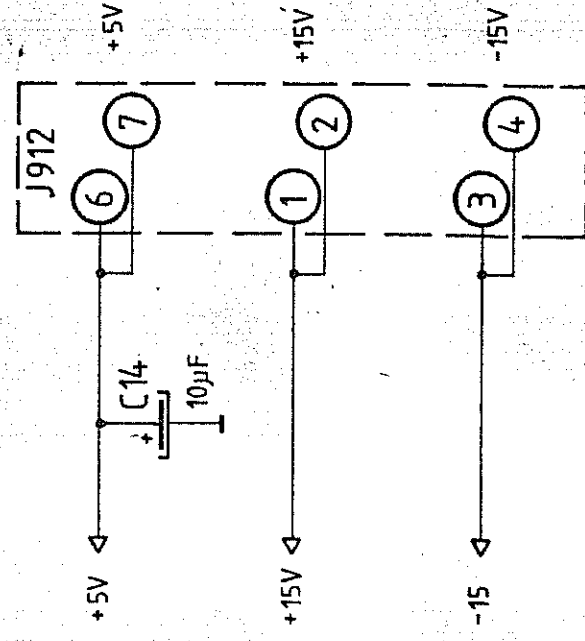
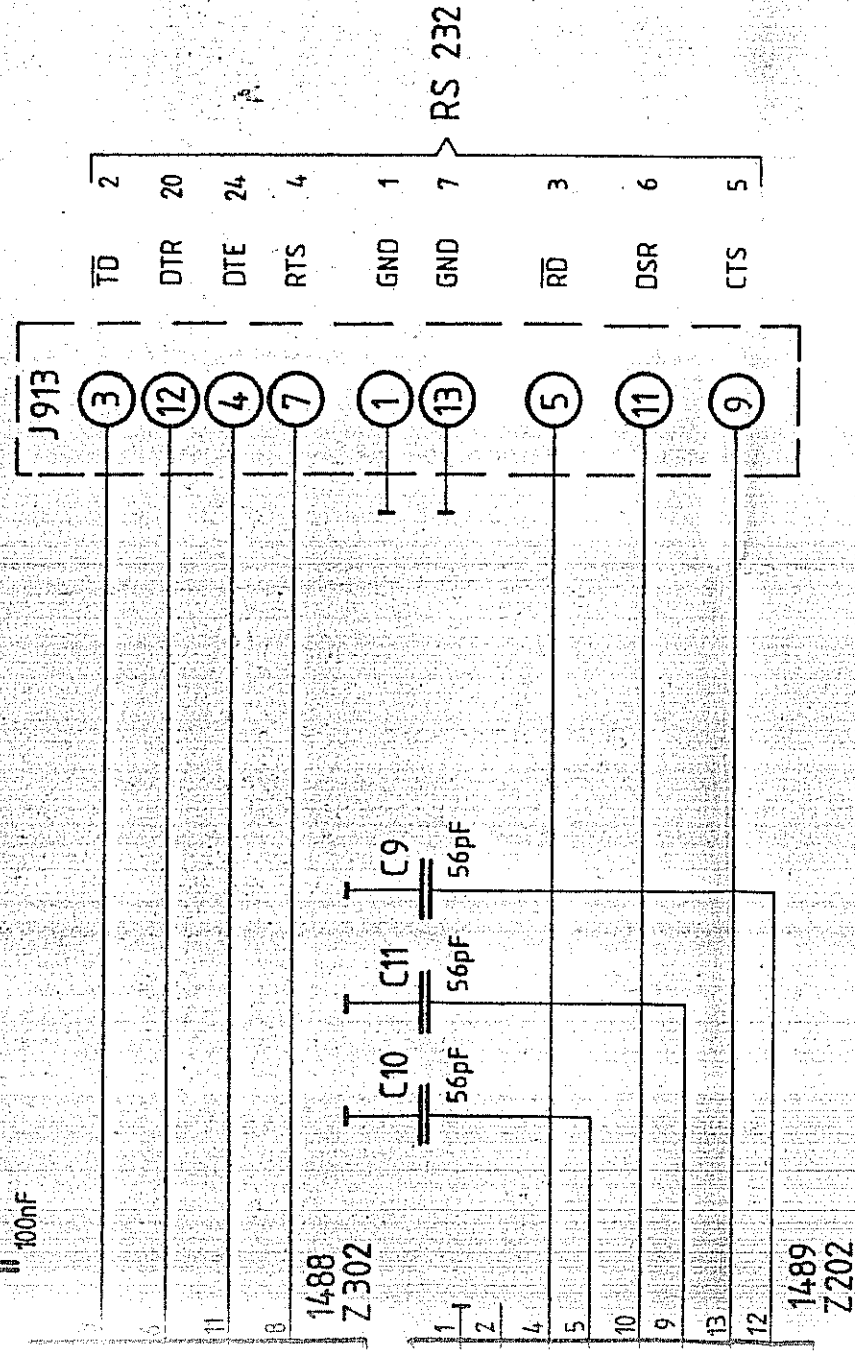


Dieses Dokument und die darin enthaltenen Informationen sind unser geistiges Eigentum und dürfen ohne unsere schriftliche Genehmigung auf keine Art durch den Empfänger kopiert, für eigene Zwecke verwendet oder Dritten zugänglich gemacht werden. Widrigfalls wird jegliche Haftung abgelehnt und uns Schadenersatzforderungen vorbehalten.

Hinweise:

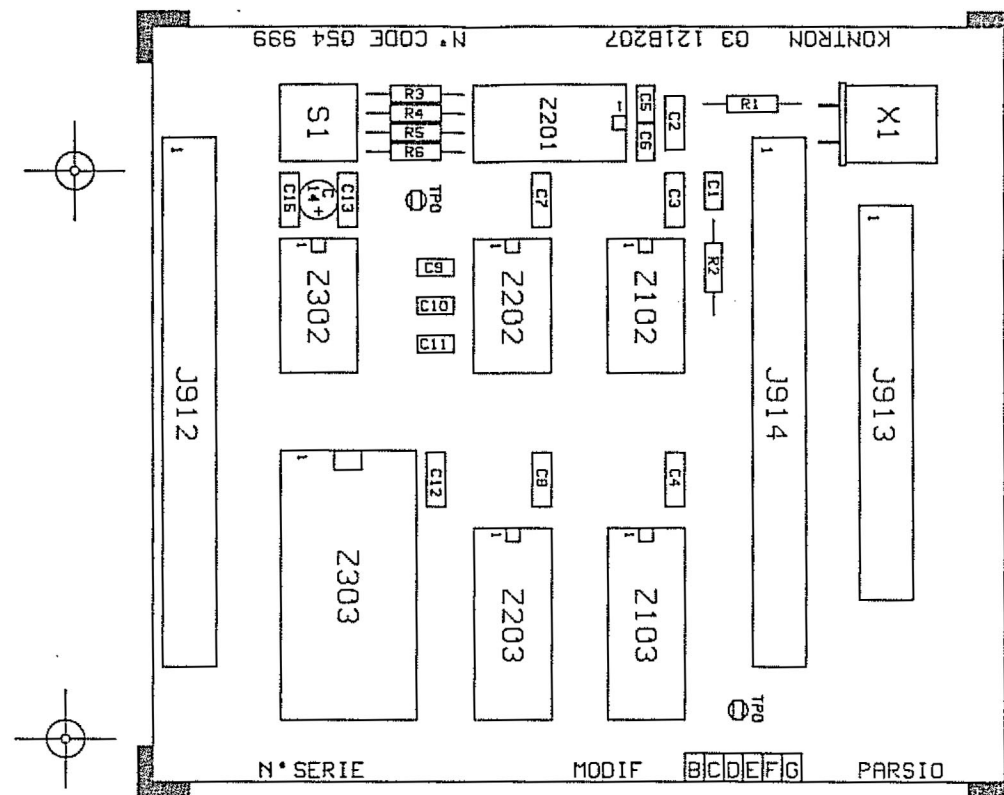
- 1) MODIF 30.7.86 ENDCONTROL
- 2) Valid. 1. 8. 9. 86 G.R.D.

FLOPPY



```
precision of resistors:
5%-□-□- 1%-□-□-
unnamed diodes:
type 1N4148
single drawn gates:
GND Pins: 7, 8 or 10
VCC Pins: 14, 16 or 20
```

Rep.	N° d'Ensemble	Qté par Ensemble	Matière :	Protection :
Etabli :	SIGMA 1		Traitement :	Poids :
HK			Tolérance Générale :	Echelle :
Date :	PARSIO			
12.84	854 972			
Vérifié :				
74				

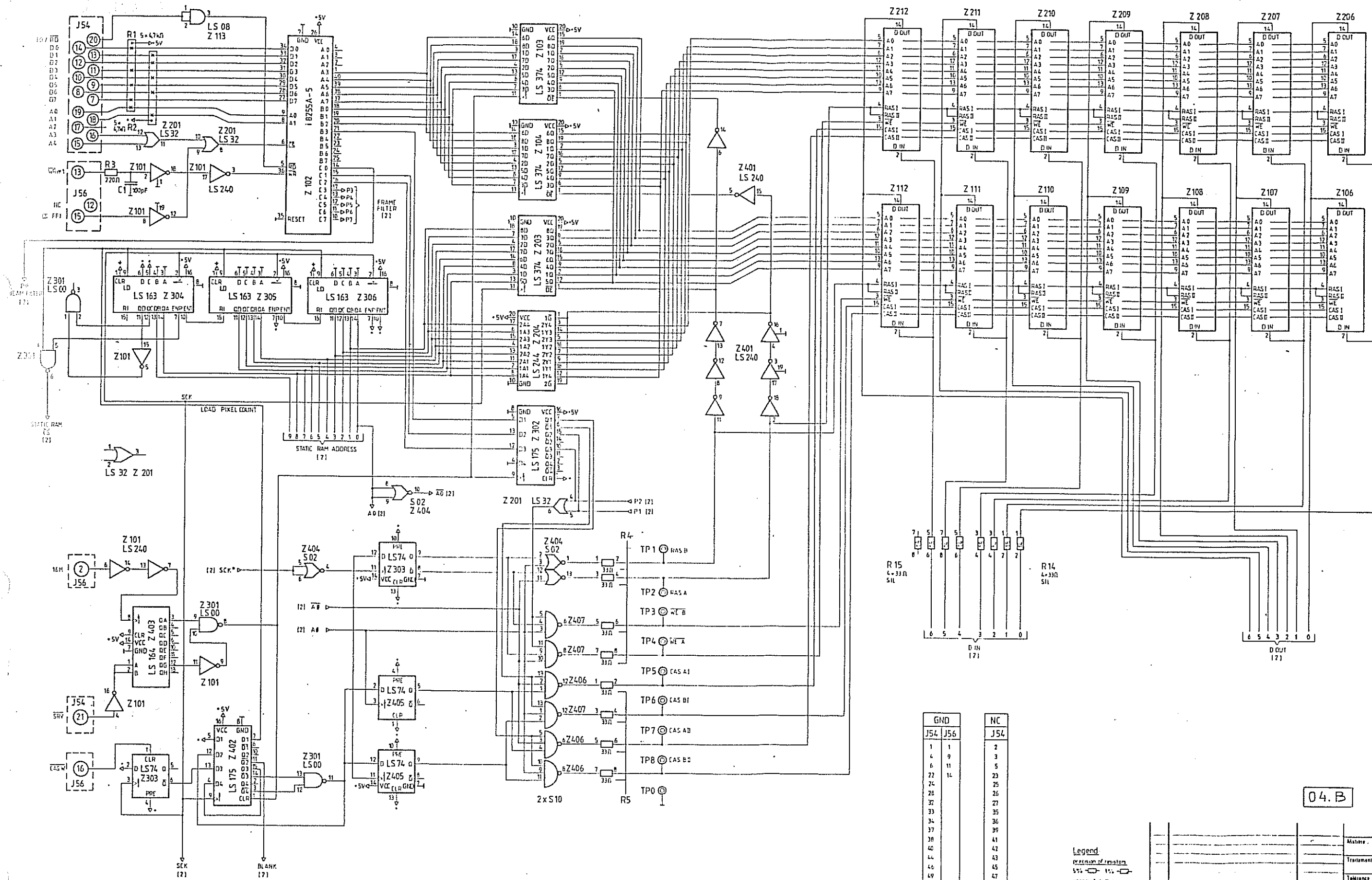


Rep.	N° d'Ensemble	0 ^{le} par Ensemble	Matière	Protection
Etabli :	SIGMA 1		Traitement	Poids
JF - T	PCA PARSIO		Tolérance Générale	Echelle
Date :	854972			
Vérifié :	03-121B307			
10-07-86			3	Le 31 04.86
			Edi.	Date

MODIFICATIONS 0.B) Modif. Dev. 5/12/85 (2A) Nouvelle version (3) Valid. Le 31.1.86. G. Rivallant



Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite.

12 x HM4864 P-2
1150ns ACCESS / 170ns WITH RECURSIVE PROMISE
+5V—PIN 8
GND—PIN 16 NC—PIN 1

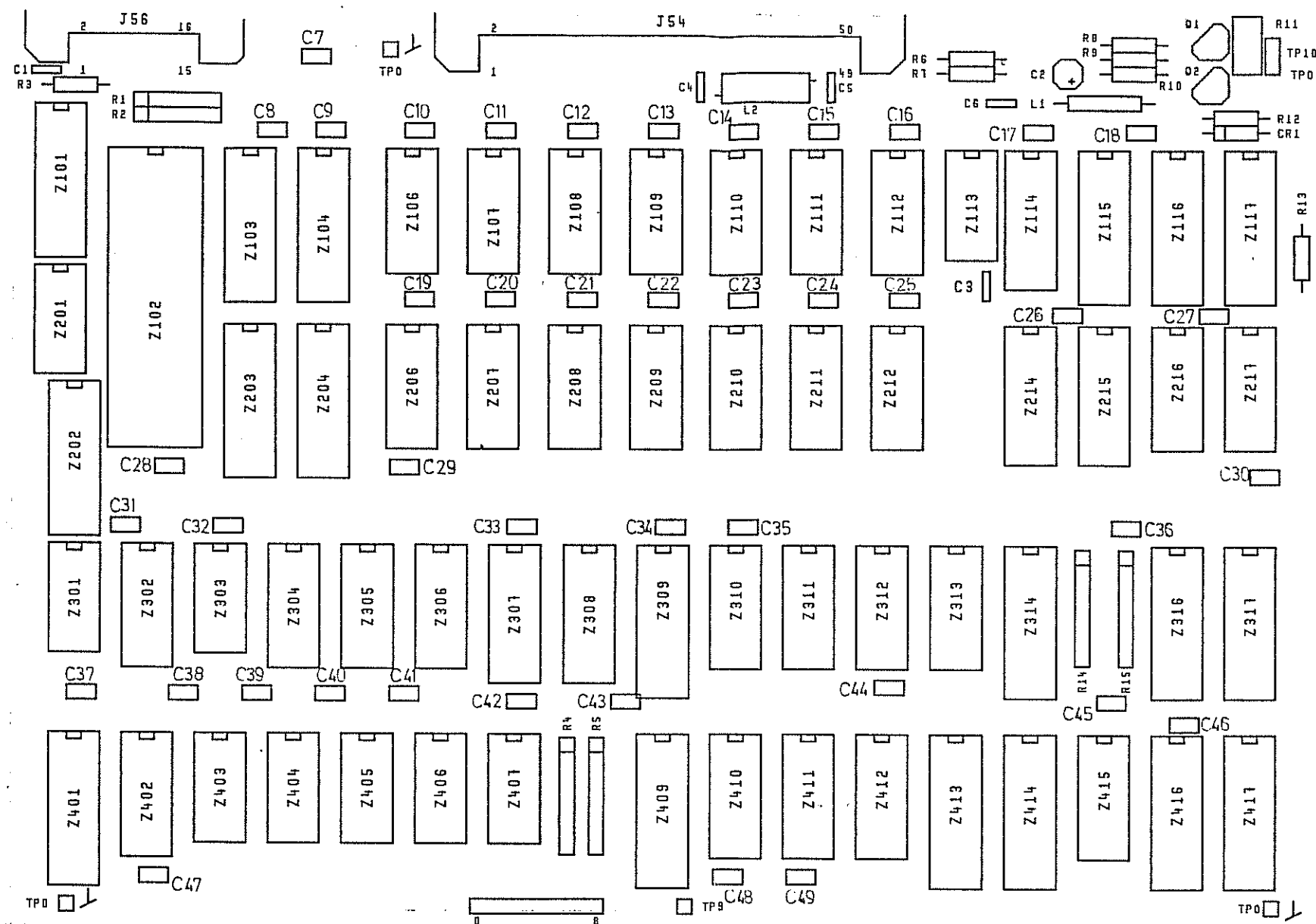


04.B

GND		NC
J54	J56	J5
1	1	2
4	9	3
6	11	5
22	12	23
24		25
28		26
32		27
33		35
34		36
37		39
38		41
40		42
44		43
46		45
49		47
50		

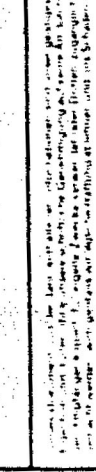
Legend:
position of registers
 5%  1% 
unpowered signal
 type IN4148
single brown gate
 GND Pins 7, 8 or 10
 VCC Pins 14, 16 or 20

[illegible]



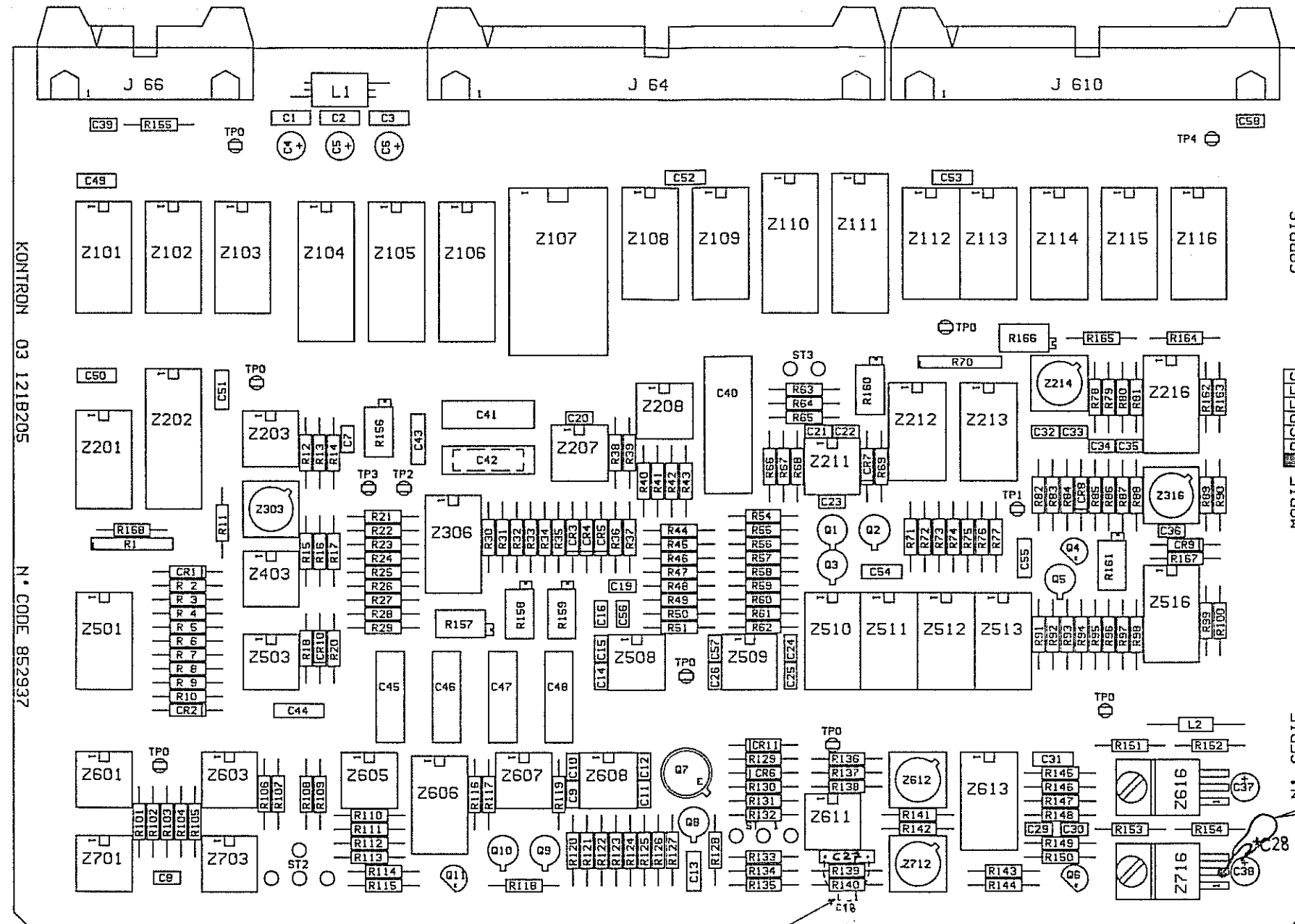
Rep.	N° d'Ensemble	Qte par Ensemble	Matière	Protection
Etabli:	SIGMA 1		Traitement	Poids
JF-T	PCA FLST		Tolérance Générale	Echelle
Date :	852864		KONTRON INSTRUMENTS	
Vérifié:	03-121B303		4 1-4	
Edi.		Date		

④ Validé le 1.4.88 par
 MODIFICATIONS a.B. / Modif. par 5/12/85. ②A Nouvelle version ③ Validé le 31.1.86 G. Rivallant 39/ bc N° 01.88-03
 - BM - 22/03/88





IMPLANTATION CARDIS



Solder C18 sur C27 coté soudure

Solder C28 coté composants
le + sur C38+ le - sur le 2 de Z716.

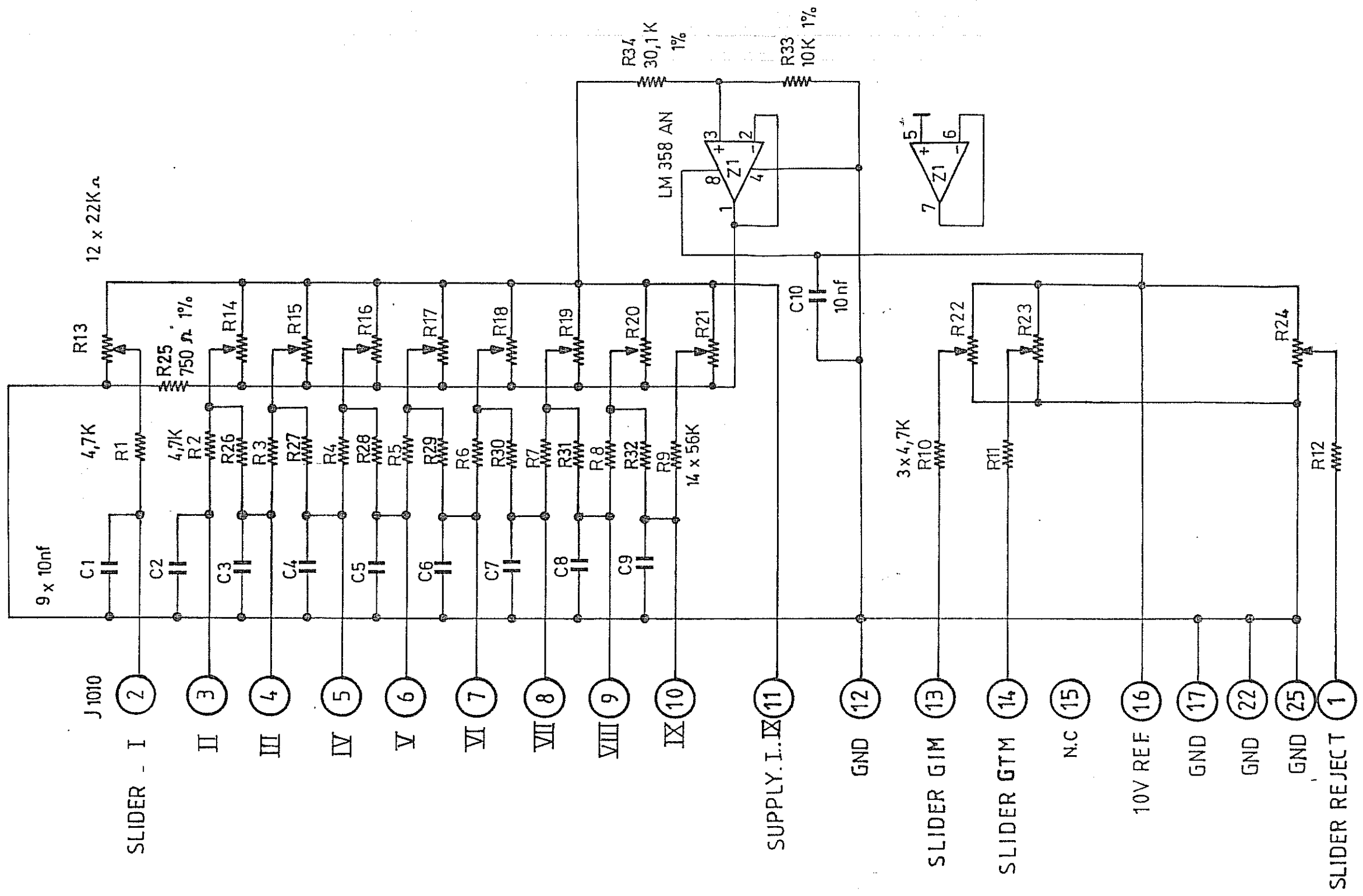
Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli:	SIGMA 1		Traitement	Poids
Date :	PCA CARDIS		Tolérance Générale	Echelle
5.12.85	852929		KONTRON INSTRUMENTS	
Vérifié:	13/5/86		03_121B305	
Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite			5	19/6
			Edi.	Date

3) C28 sur Z de Z716, C27 = 1nF 1%, 3/07/86 2) Valide le 3.9.86 4A) DC 03.91.009 "ajout C18" 5) Validé le 19.6.82 J.R.
MODIFICATIONS de Modif. dev. 5/12/85. 2A) Nouvelle version 3) Valid. le 31.01.86. G. Rivallant

1

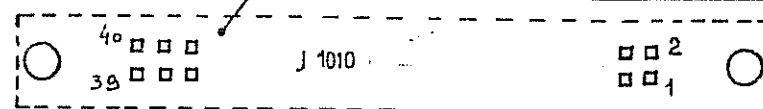
2

3

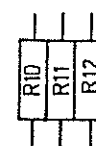
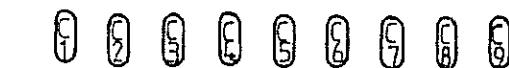
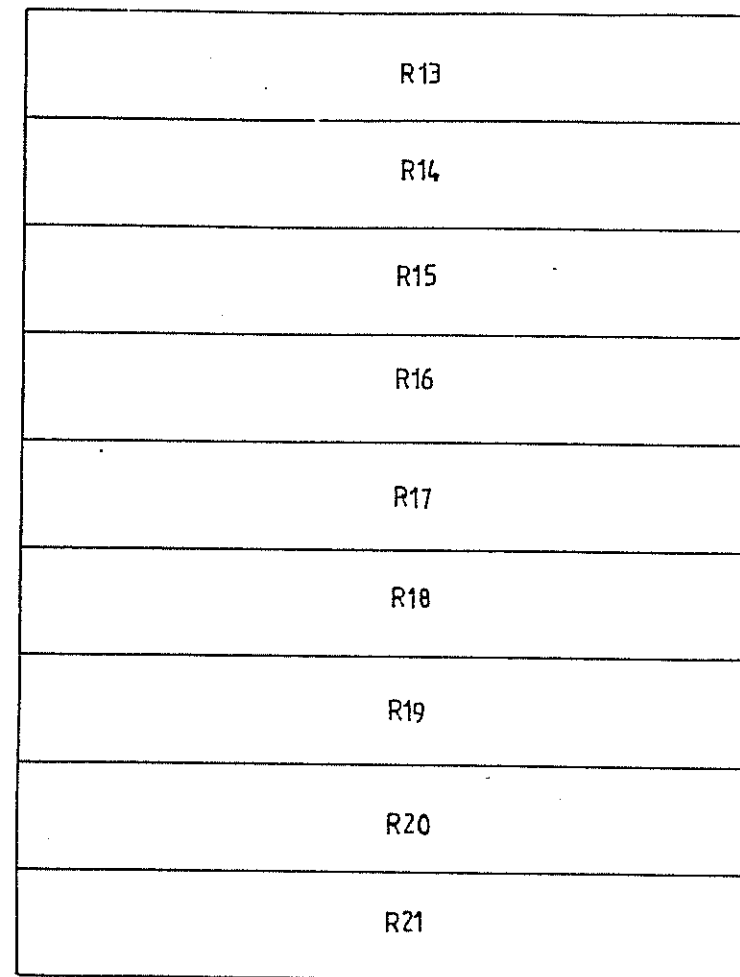


Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli : <i>B. B. M.</i>	SIGMA 1SC		Traitement	Poids
Date : 9/10/85	PCA POLIN		Tolérance Générale	Echelle
Vérifié : <i>St</i>	schema 854 751		KONTRON INSTRUMENTS	
MODIFICATIONS 2) création à partir de l'ancienne Polin 9/10/85. 3) Validé le 12.02.86 RL				
Ce document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite			03.1.20B0043 12.01.86	

EST MONTÉ COTÉ SOUDURES



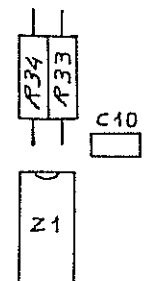
R25



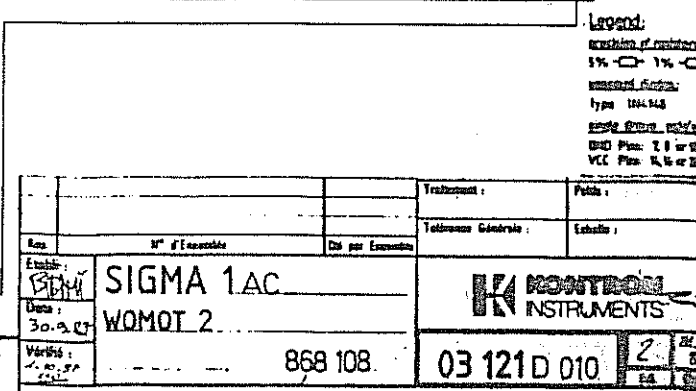
R22

R23

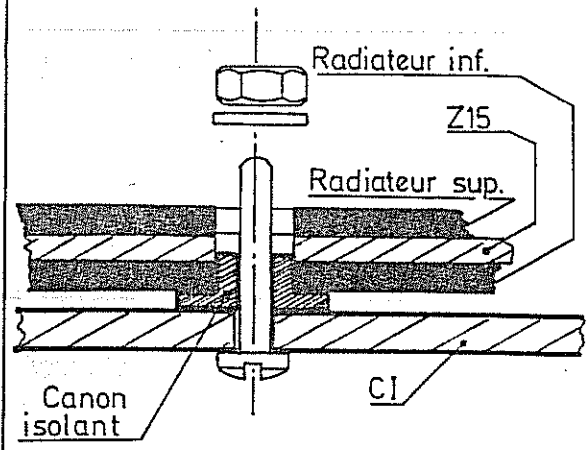
R 24



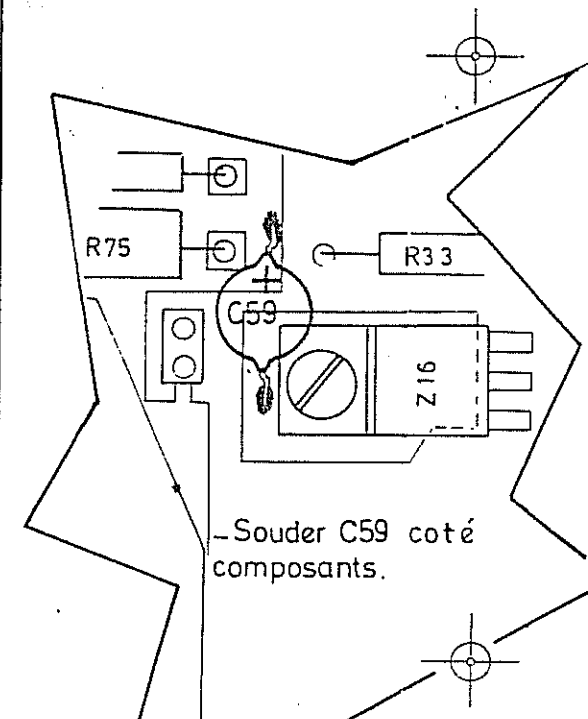
Rep.		N° d'Ensemble	01 ^{er} par Ensemble	Matière		Protection
Etabli :		SIGMA 1		Traitement		Poids
Date :		PCA POLIN		Tolérance Générale		Echelle 2/1
Vérifié :		implantation 854751		KONTRON INSTRUMENTS		
MODIFICATIONS		1/1) Création à Paris de l'horlogerie Polin 9/10/85. 2) Validé le 12-02-86 RL		03-120c304		2 120 86
Ce document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite.						



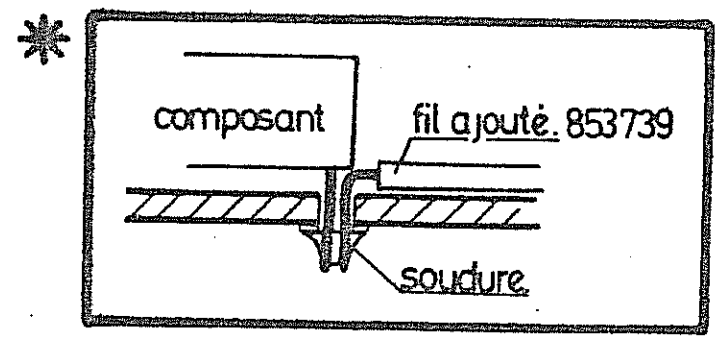
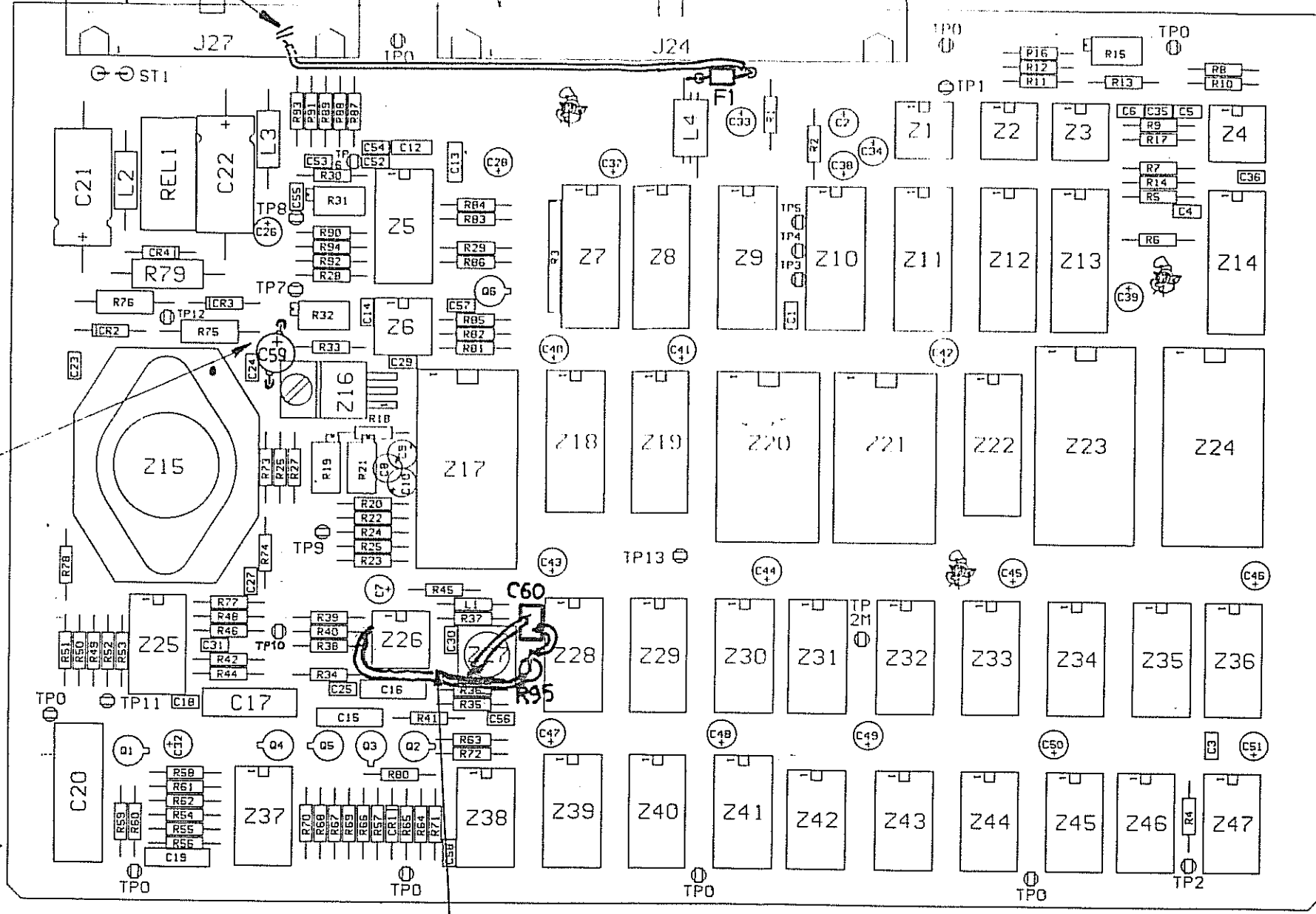
Souder un fil entre 24 de J27 et F1. côté composants.
Relier l'autre côté de F1 à L4.
* (Voir détail)



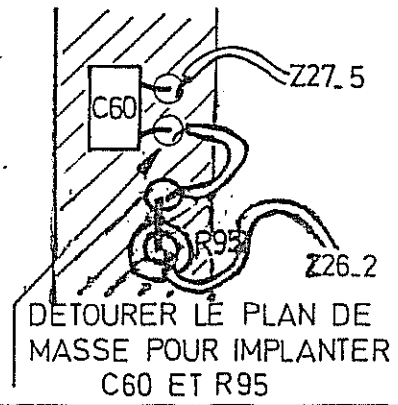
MONTAGE DE Z15



Souder C59 coté composants.



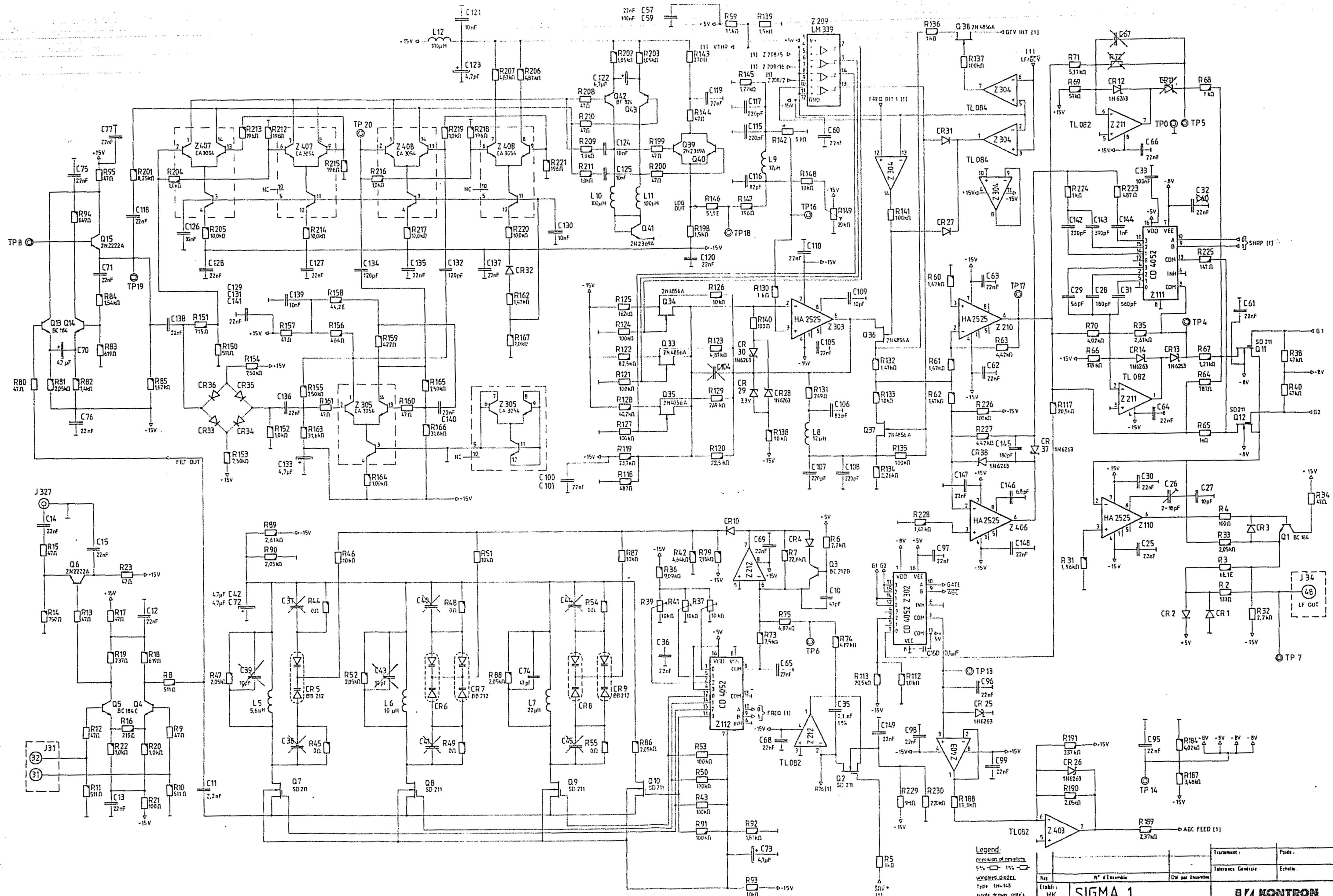
Relier R95 au 2 de Z26
Relier R95 à C60
Relier C60 au 5 de Z27



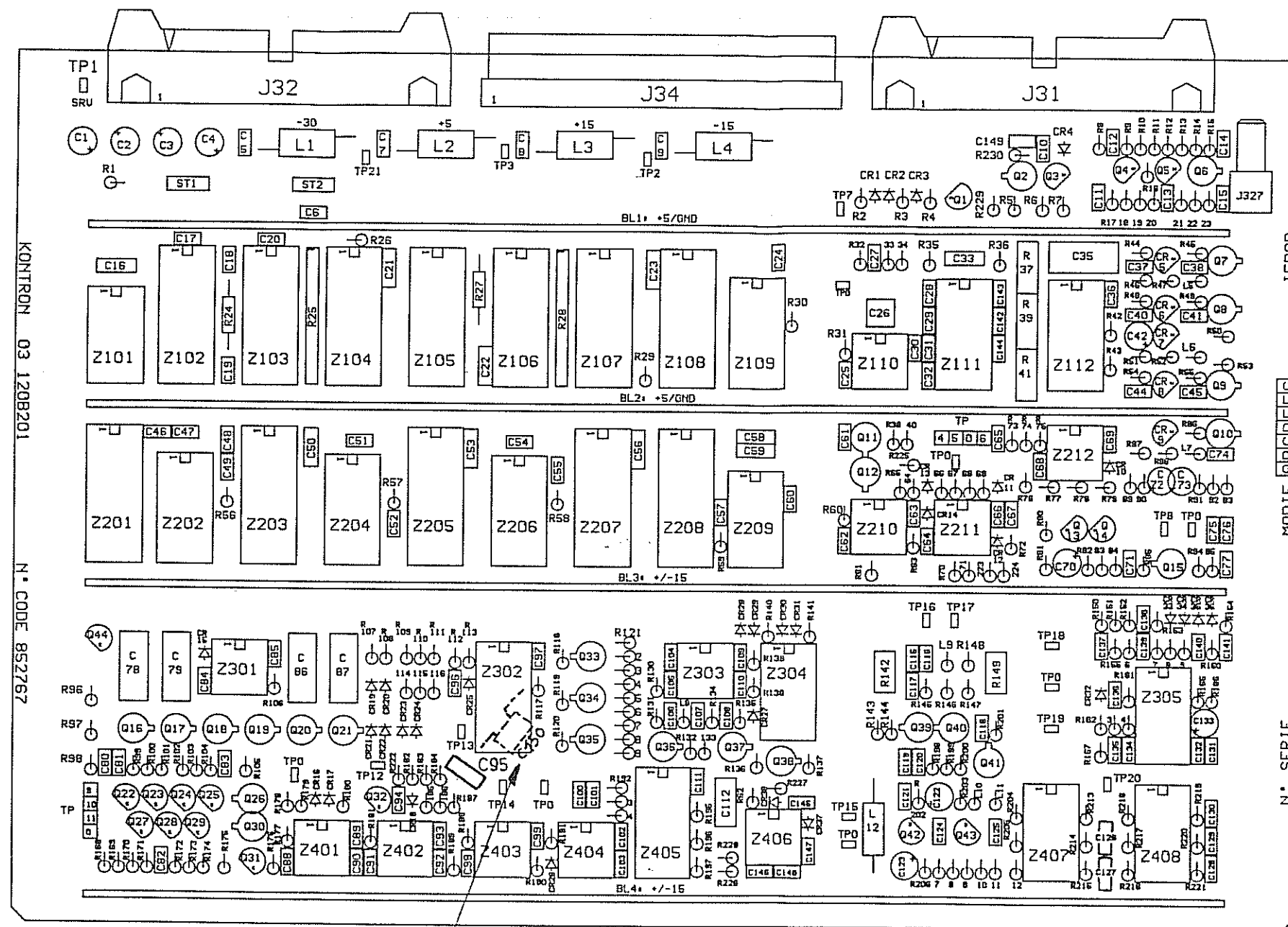
DETOURER LE PLAN DE MASSE POUR IMPLANTER C60 ET R95

Rep.		N° d'Ensemble		Qté par Ensemble		Matière	Protection
Etabli:		SIGMA 1 AC				Traitement	Poids
Date:		PCA WOMOT 2				Tolérance Générale	Echelle
Vérifié:		868.108				KONTRON INSTRUMENTS	
1-10-87						03-121B310	
4						4 19.7 gr	
						Edi. Date	

④ Valable date 19.7.84
② Valable 24.2.88 JF ZF) DC N° 03-88-20 29.4.88 B71- ③ Valable 17.5.88 JF ⑤ 17.7.91 96 03 90 216
MODIFICATION: 0A) création 29.7.87 B71- ① Valable 21.10.87 JF ⑥ DC N° 03.87.46 et 03.87.48 B71 3.02.88



IMPLANTATION IFDOD



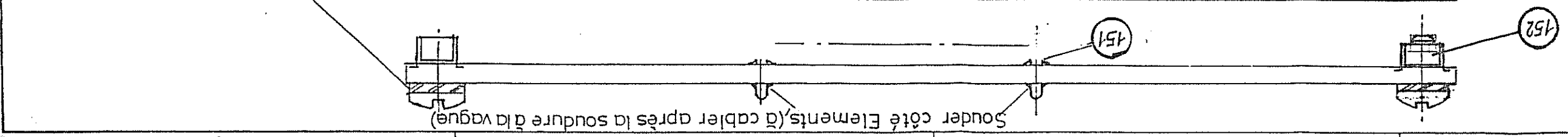
C150 CABLÉ COTÉ SOUDURE
ENTRE 8 ET 13 DE Z302

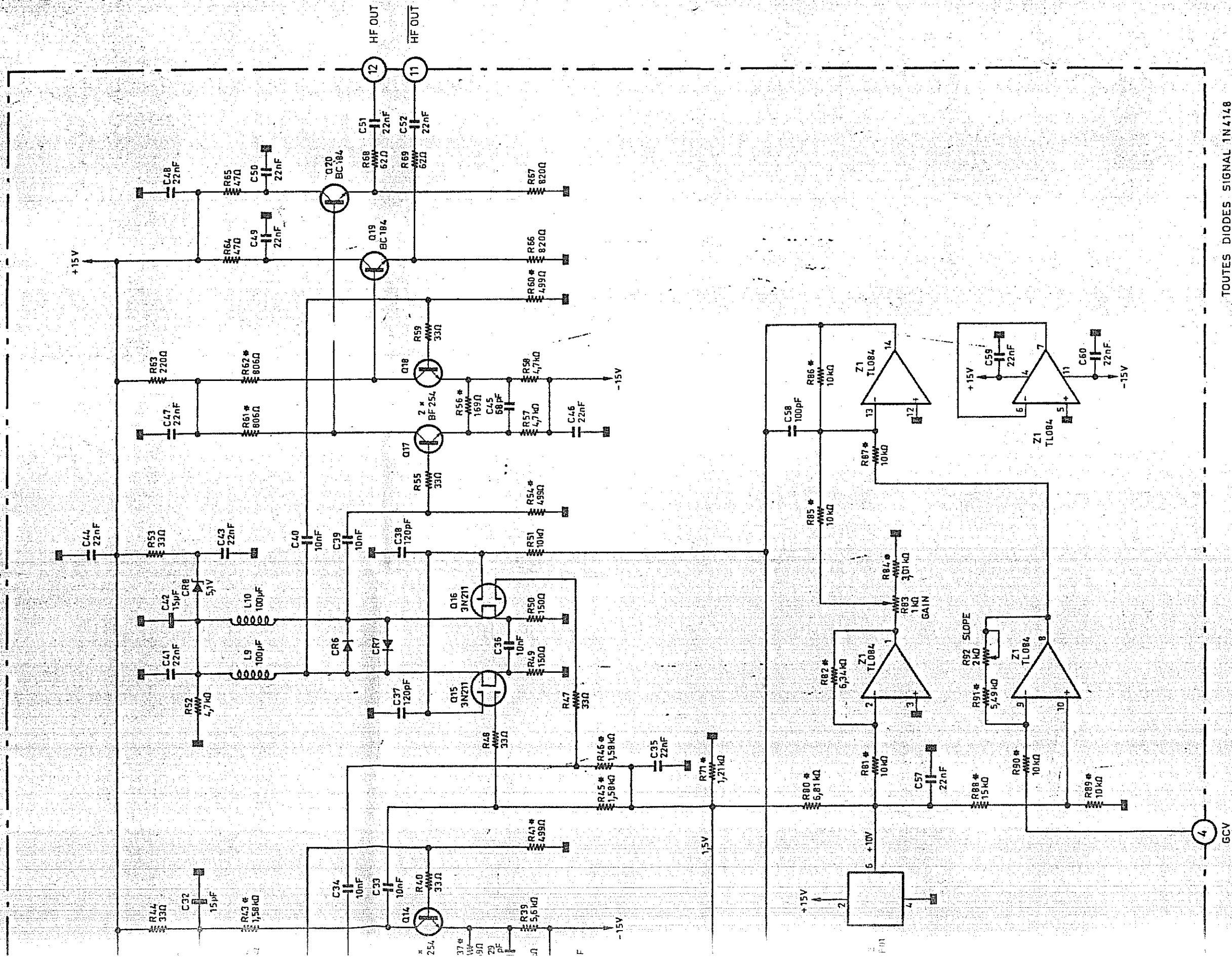
Rep.	N° d'Ensemble	0 ^{te} par Ensemble	Matière	Protection
SIGMA 1 PCA IFDOD implantation 852 724			Traitement	Poids
			Tolérance Générale	Echelle 1/1
Date : 27-2-85 Vérifié : <i>K. G. 60</i>			KONTRON INSTRUMENTS	
03-120B301			4. 21.10 Edi. Date	

③ Validé le 28.6.85 par 3A) DC N° 03-80-156 22/10/80 3A) ④ Validé le 24.10.80
 MODIFICATIONS ① Validé le 8.3.85 1A) C45 → 0,1µF 25/08/85 ② Validé le 5.9.86 2A) DC N° 03-88-31 22/06/88 3A)

NOTA

GVC
 +15V
 -15V
 GND
 FRCD2
 FRCD1
 FRCDO



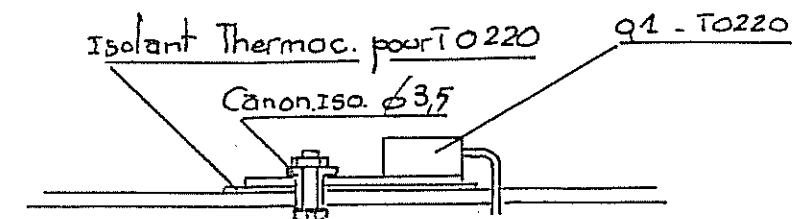
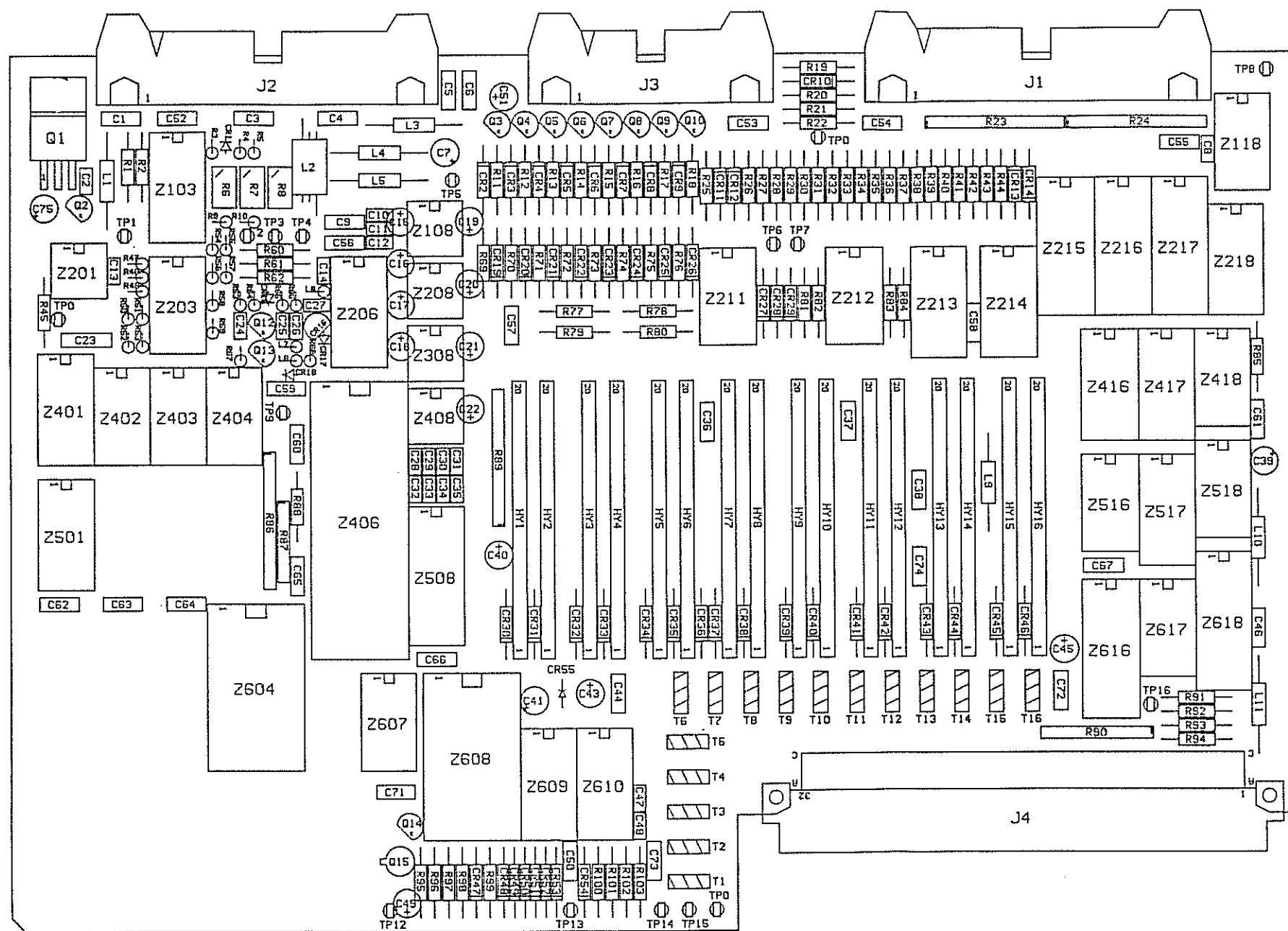


TOUTES DIODES SIGNAL 1N4148

Les éléments du filtre R74, R75, R16, R17, R18, C8, C9, C10, C11, L1, L2 Q5-Q8 ne sont pas câblés

Matériau :	Projet :
Traitement :	Poids :
Tolérance Globale :	Echelle :
N° d'Ensemble	Objet par Ensemble
Rep. :	Etiquette :
Date :	9-11-81
Vérifié :	
PCA SGMII R33.681	
ROCHE BIOELECTRONIQUE	
22-1-20-D032	
283	
Date	

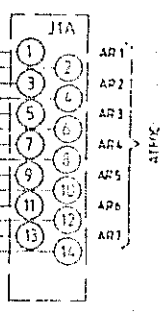
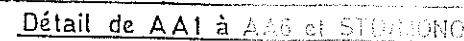
Ce document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite



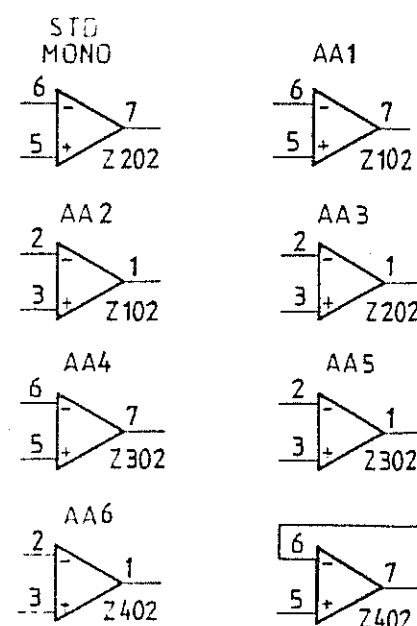
Rep.	N° d'Ensemble	0 ^{le} par Ensemble	Matière	Protection
Etabli:			Traitement	Poids
Date:			Tolérance Générale	Echelle 1/1
Vérifié:				
PCA SISEND 2			24.11.89	
868 094			03.1.20B31.1	
			Edi. Date	

MODIFICATIONS en création (1) Validé le 12.9.87 (1A) 03.03.558 (2) Validé le 24.11.89

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite



	STD MONO	AA1	AA2	AA3	AA4	AA5	AA6
I C1	C74	C36	C34	C72	C119	C117	C155
C2	C78	C40	C33	C71	C123	C116	C154
C3	C83	C45	C43	C81	C127	C125	C152
C4	C77	C39	C32	C70	C122	C115	C153
C5	C50	C10	C6	C46	C90	C86	C128
C6	C51	C11	C7	C47	C91	C87	C129
C7	C66	C27	C18	C57	C106	C97	C144
C8	C73	C35	C20	C59	C118	C99	C147
C9	C60	C21	C19	C58	C100	C98	C145
C10	C76	C38	C31	C69	C121	C114	C150
C11	C75	C37	C30	C68	C120	C113	C149
C12	C62	C23	C14	C53	C102	C93	C140
C13	C67	C28	C13	C52	C101	C92	C148
C14	C65	C26	C17	C56	C105	C96	C143
C15	C63	C24	C15	C54	C103	C94	C141
C16	C64	C25	C16	C55	C104	C95	C142
C17	C82	C44	C42	C80	C126	C124	C151
C18		C8		C48		C88	C130,146
C19		C9		C49		C89	C131
C20	C61	C22					C139
C21	C79	C41					



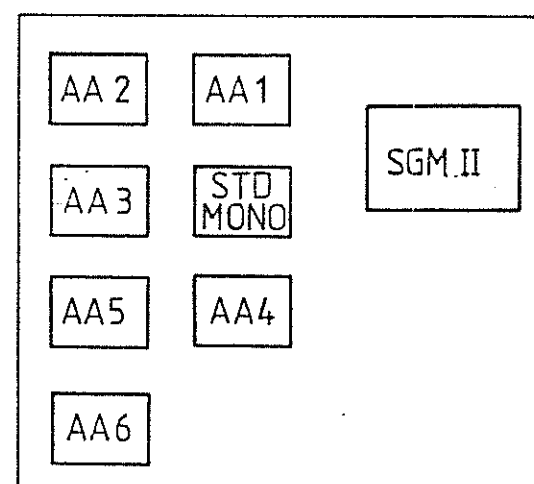
	STD MONO		AA1	AA2	AA3	AA4	AA5	AA6
I170	T7		T1	T2	T3	T4	T5	T6

TP80	TP7		TP1	TP2	TP3	TP4	TP5	TP6
------	-----	--	-----	-----	-----	-----	-----	-----

IQ 90	Q 21		Q 11	Q 10	Q 20	Q 33	Q 22	Q 39
Q 91	Q 16		Q 5	Q 1	Q 12	Q 25	Q 12	Q 35
Q 92	Q 17		Q 6	Q 2	Q 13	Q 27	Q 23	Q 36
Q 93	Q 18		Q 7	Q 3	Q 14	Q 28	Q 24	Q 37
Q 94	Q 19		Q 8	Q 4	Q 15	Q 29	Q 25	Q 38

I Z100	Z 202		Z 102	Z 102	Z 202	Z 302	Z 302	Z 402
Z101	Z 303		Z 203	Z 201	Z 201	Z 403	Z 401	Z 501

I CR30	CR14		CR4	CR 1	CR 11	CR 22	CR19	CR 31
CR31	CR15		CR5	CR 2	CR12	CR 23	CR 20	CR 32
CR32	CR18		CR10	CR9	CR17	CR28	CR 27	CR 34
CR33	CR16		CR 6	CR3	CR13	CR24	CR21	CR 33

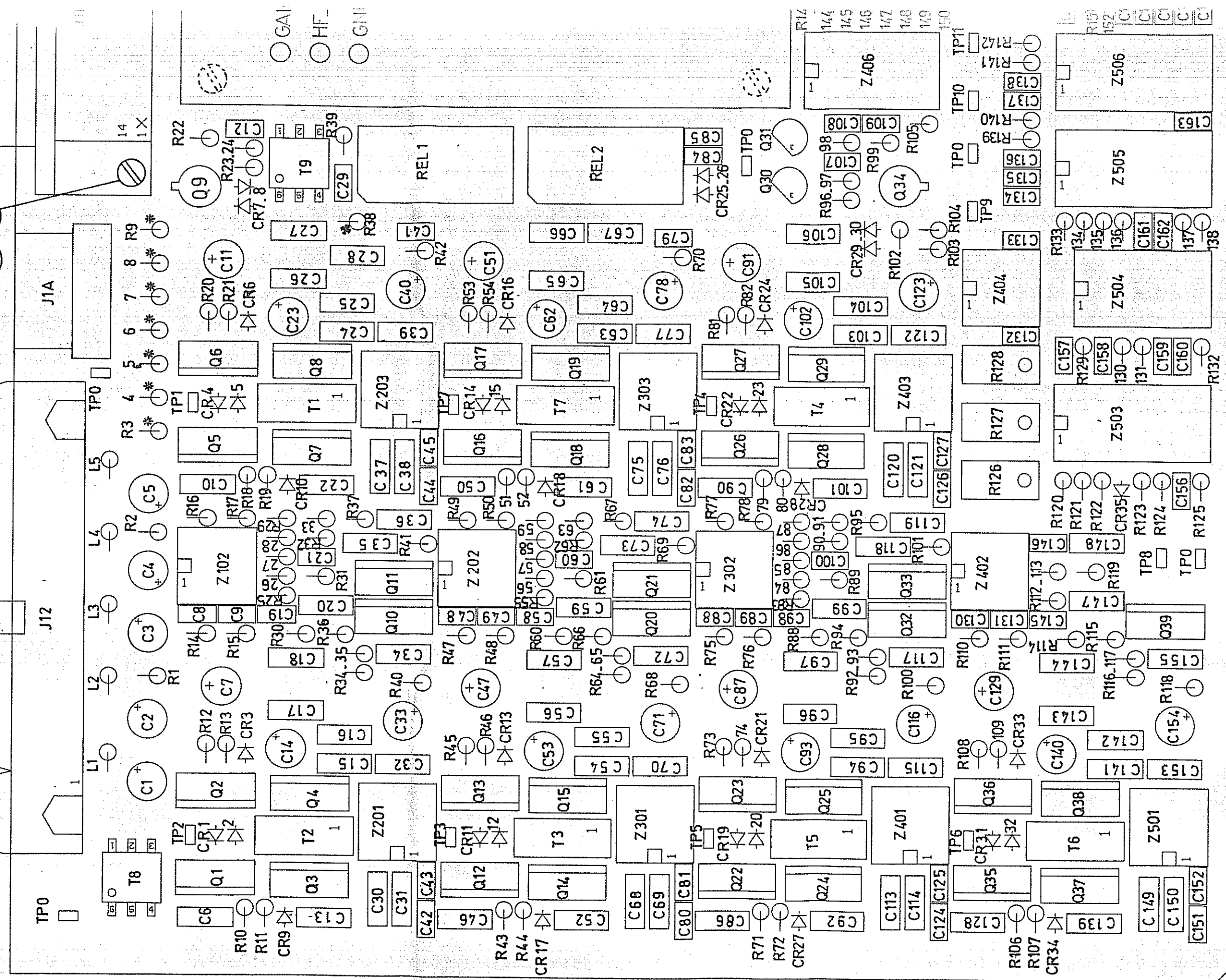


I R40	R59	R29	R 26	R 56	R 87	R 84	R 113
R41	R57	R27	R 35	R 65	R85	R 93	R 117
R42	R69	R41	R 34	R 64	R101	R 92	R 116
R43	R70	R42	R 40	R 68	R103	R100	R 118
R44	R49	R16	R14	R 47	R 77	R 75	R110
R45	R58	R28	R30	R 60	R 86	R 88	R114
R46	R51	R18	R10	R 43	R 79	R 71	R106
R47	R53	R20	R12	R 45	R 81	R 73	R108
R48	R63	R33	R31	R 61	R 91	R 89	R119
R49	R50	R17	R15	R 48	R 78	R 76	R111
R50	R62	R32	R25	R55	R 90	R83	R112
R51	R67	R37	R36	R66	R 95	R 94	R115
R52							
R53							
R54	R52	R19	R 11	R 44	R 80	R 72	R107
R55	R54	R21	R13	R 46	R 82	R 74	R109

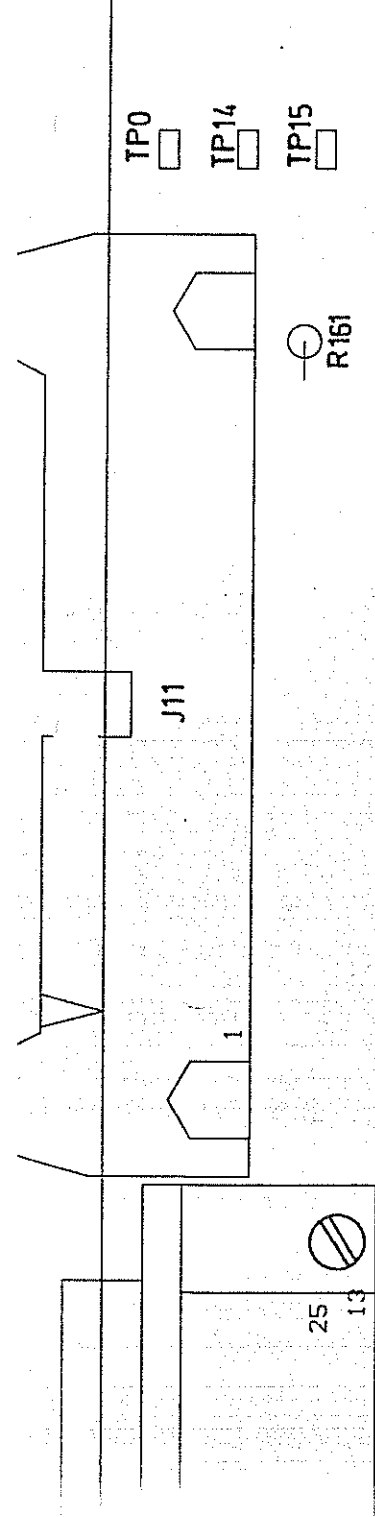
				Matière		Direction	
				Traitement		Méthode	
				Tolérance Générale		Cotation	
Rep.		N° d'Ensemble		Qté par Ensemble			
Etabli HK		SIGMA 1AA AAFRO Sheet 2 PCA 868116				BY INSTRUMENTS BY INSTRUMENTS	
Date 10.12.86							
Vérifié P. Bel.							
				03		02	

Hinweise: 1A) DC N° 03.88-3/ 27/66/88 PM ② Valid 27.7.88 JB 2A) DC N° 03.90-038 11/6/90 PM ③ Valid 14.6.90
3A) 03 92082 + 03 92052 4) Val. 9G 21-9-92

50 51 52



MODIFICATION: 08 creation 17.9.87 1A valid jusqu'à 28.03.90 BvM-2 valid jusqu'à 1.4.90. 2A valid jusqu'à 1.4.90. 2B valid jusqu'à 1.4.90. 2C valid jusqu'à 1.4.90. 2D valid jusqu'à 1.4.90. 2E valid jusqu'à 1.4.90. 2F valid jusqu'à 1.4.90. 2G valid jusqu'à 1.4.90. 2H valid jusqu'à 1.4.90. 2I valid jusqu'à 1.4.90. 2J valid jusqu'à 1.4.90. 2K valid jusqu'à 1.4.90. 2L valid jusqu'à 1.4.90. 2M valid jusqu'à 1.4.90. 2N valid jusqu'à 1.4.90. 2O valid jusqu'à 1.4.90. 2P valid jusqu'à 1.4.90. 2Q valid jusqu'à 1.4.90. 2R valid jusqu'à 1.4.90. 2S valid jusqu'à 1.4.90. 2T valid jusqu'à 1.4.90. 2U valid jusqu'à 1.4.90. 2V valid jusqu'à 1.4.90. 2W valid jusqu'à 1.4.90. 2X valid jusqu'à 1.4.90. 2Y valid jusqu'à 1.4.90. 2Z valid jusqu'à 1.4.90.



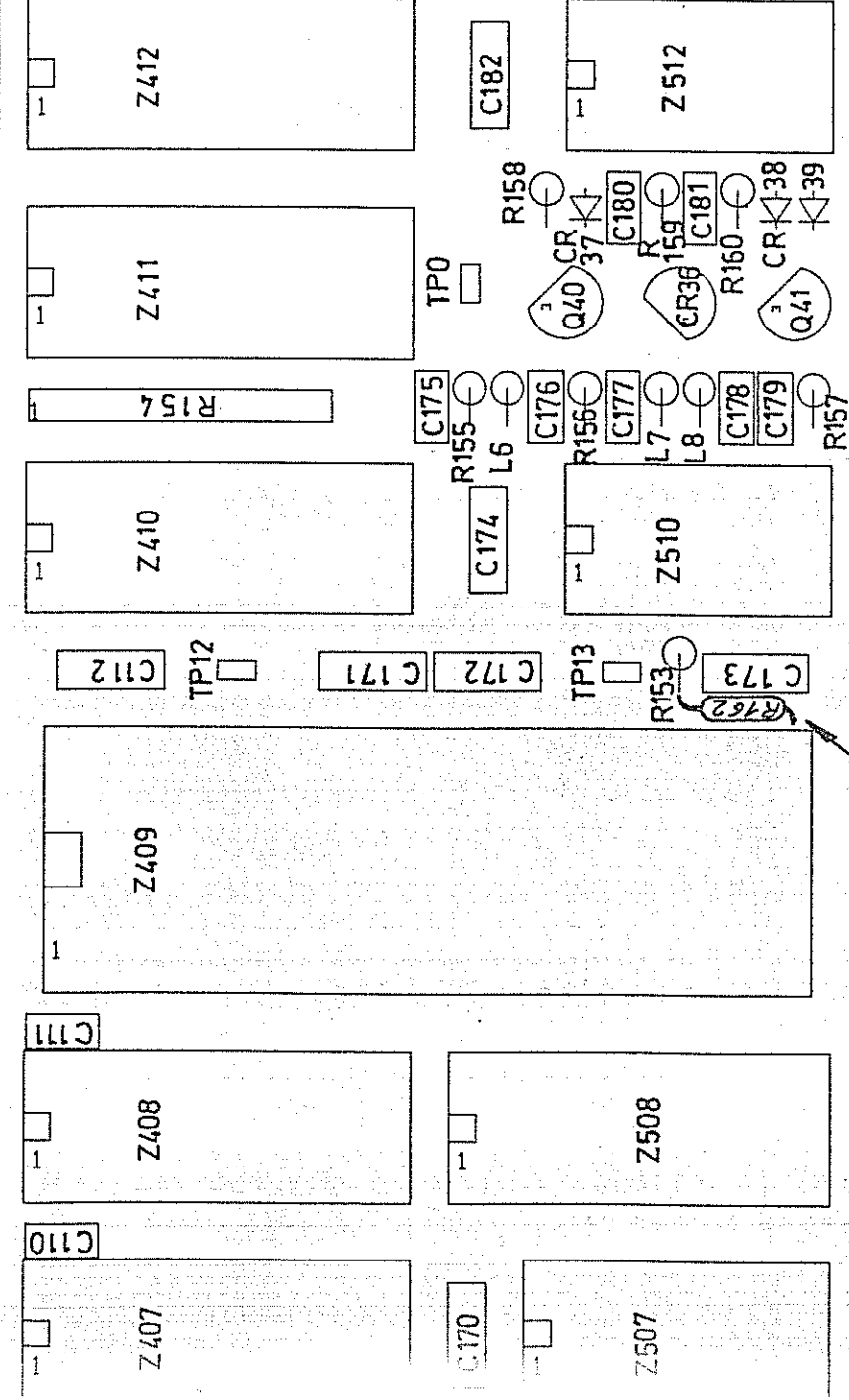
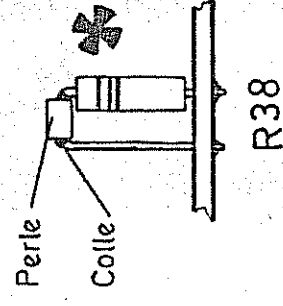
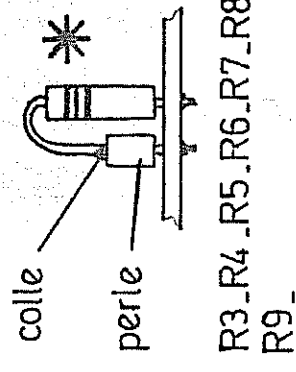
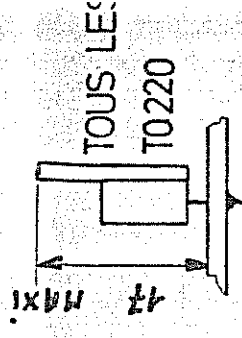
25
13

0 1 2 GND -15 +15 GCV

FRCD

GND
OUT
OUT

PCA SGM 2



SOUDER R 162 ENTRE 21 ET 23 DE Z 409

Ref	N	U	Ensemble	0 ^{le}	par Ensemble
Etabli	17-03-84	17-03-84	17-03-84	17-03-84	17-03-84
Date	17-03-84	17-03-84	17-03-84	17-03-84	17-03-84
Ventile	17-03-84	17-03-84	17-03-84	17-03-84	17-03-84

PCA AAFRO

868116

KONTRON INSTRUMENTS

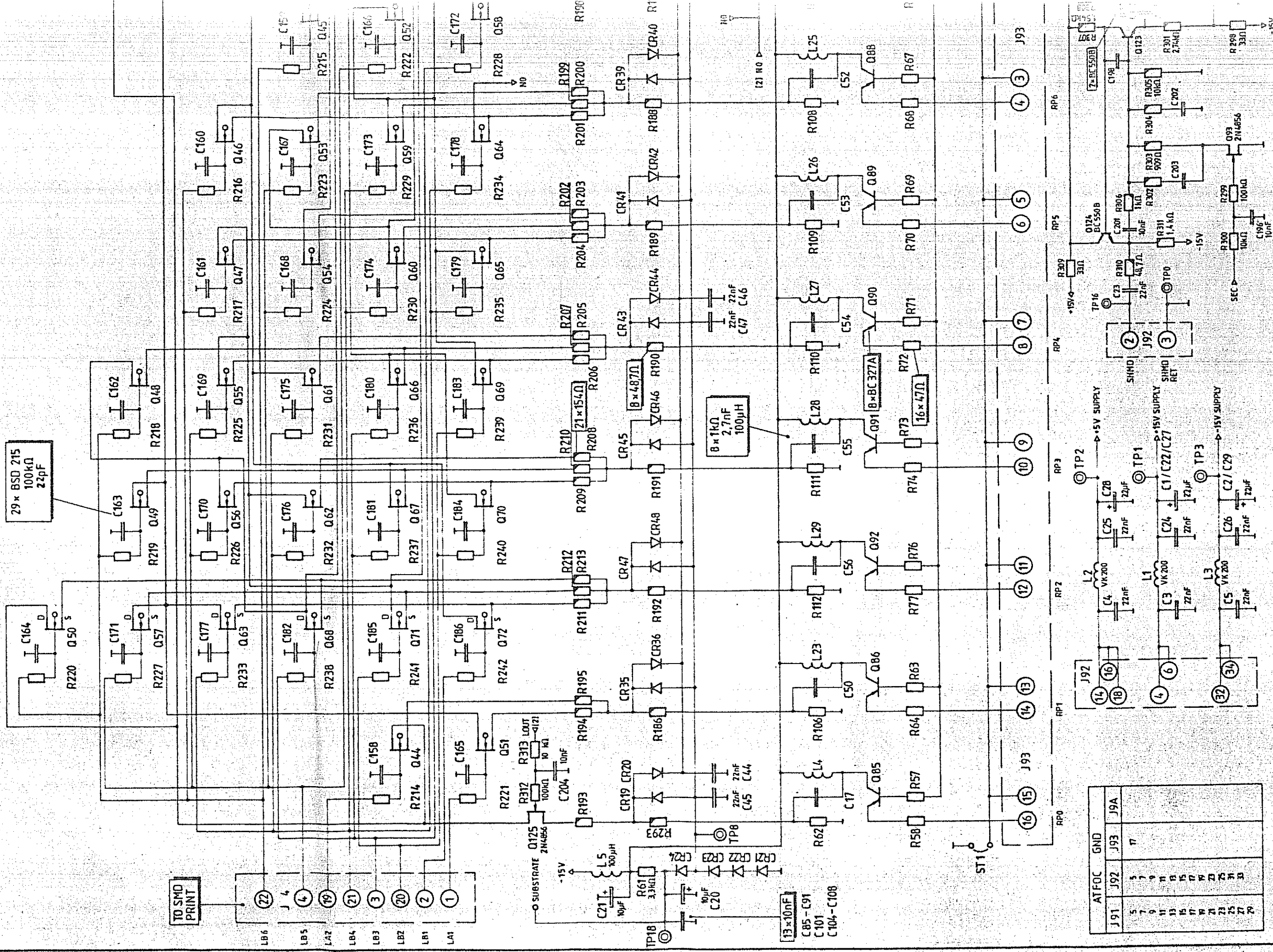
14/09/90

③ Valid 14/6/90

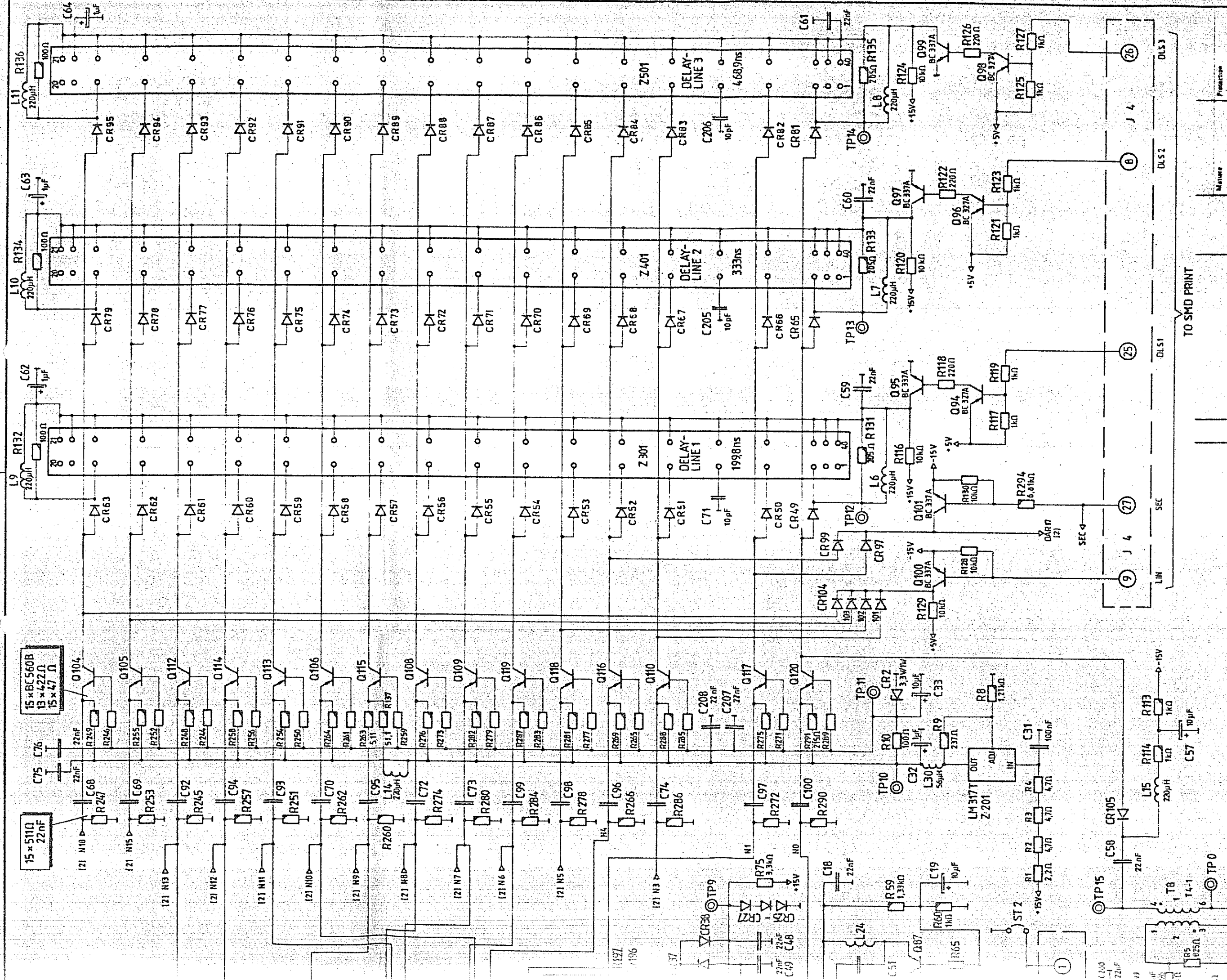
03-120-312

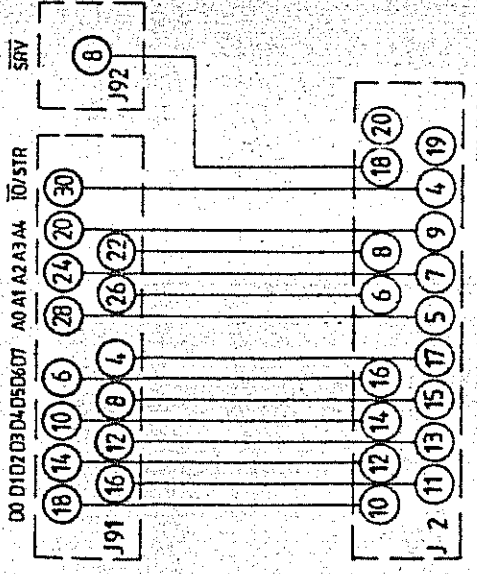
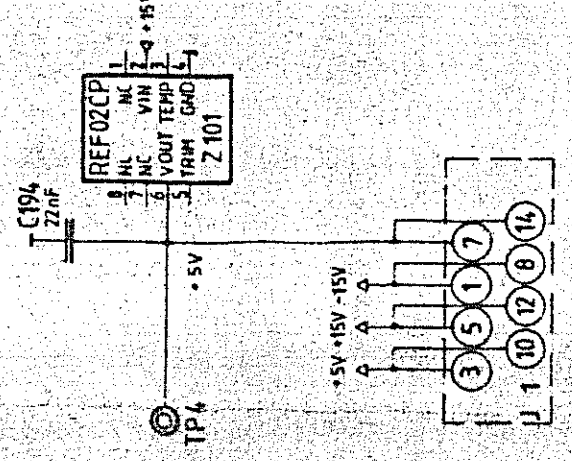
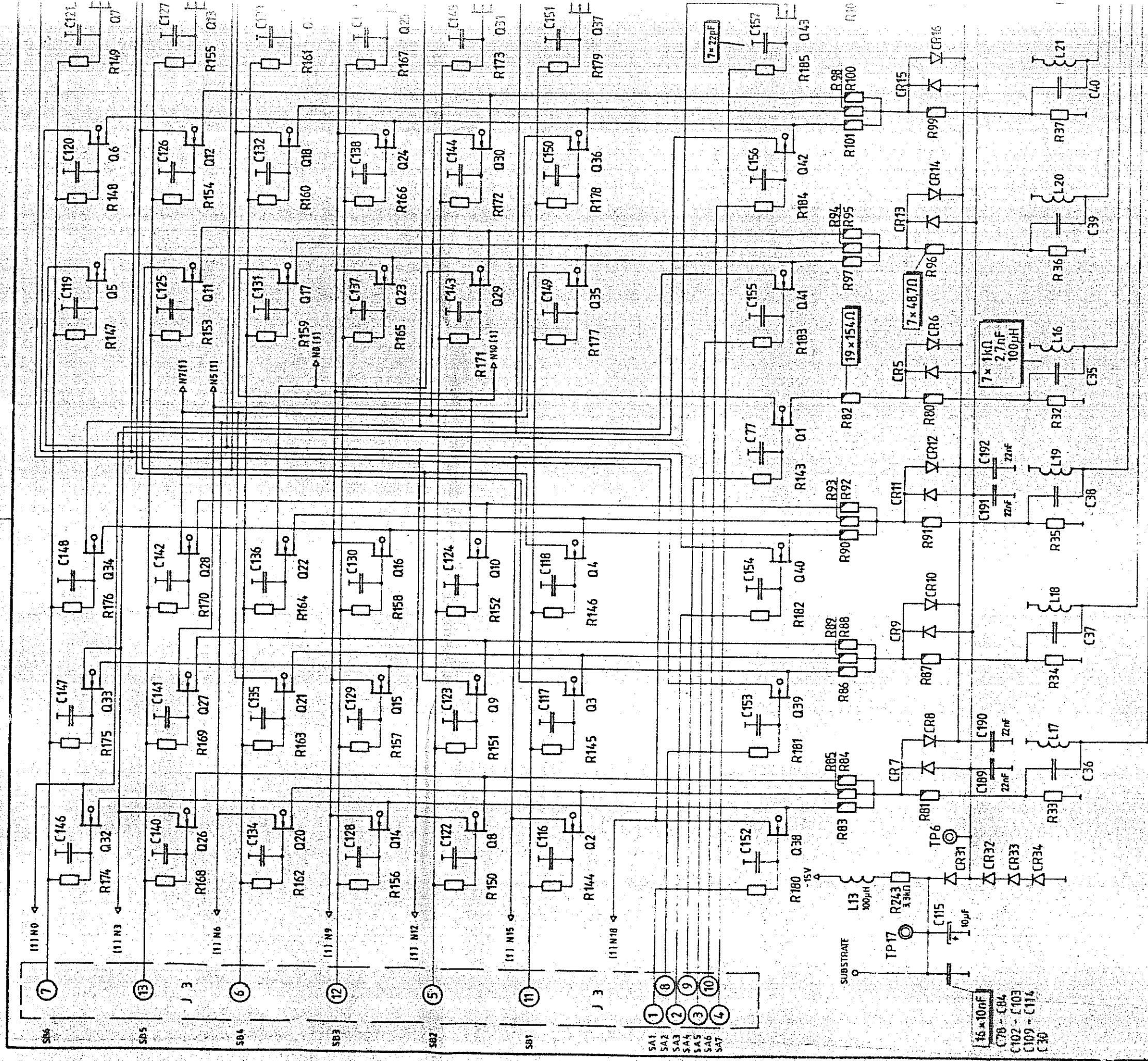
14-1 90

Ce document est la propriété de Kontron et ne peut être reproduit ni communiqué sans autorisation écrite.



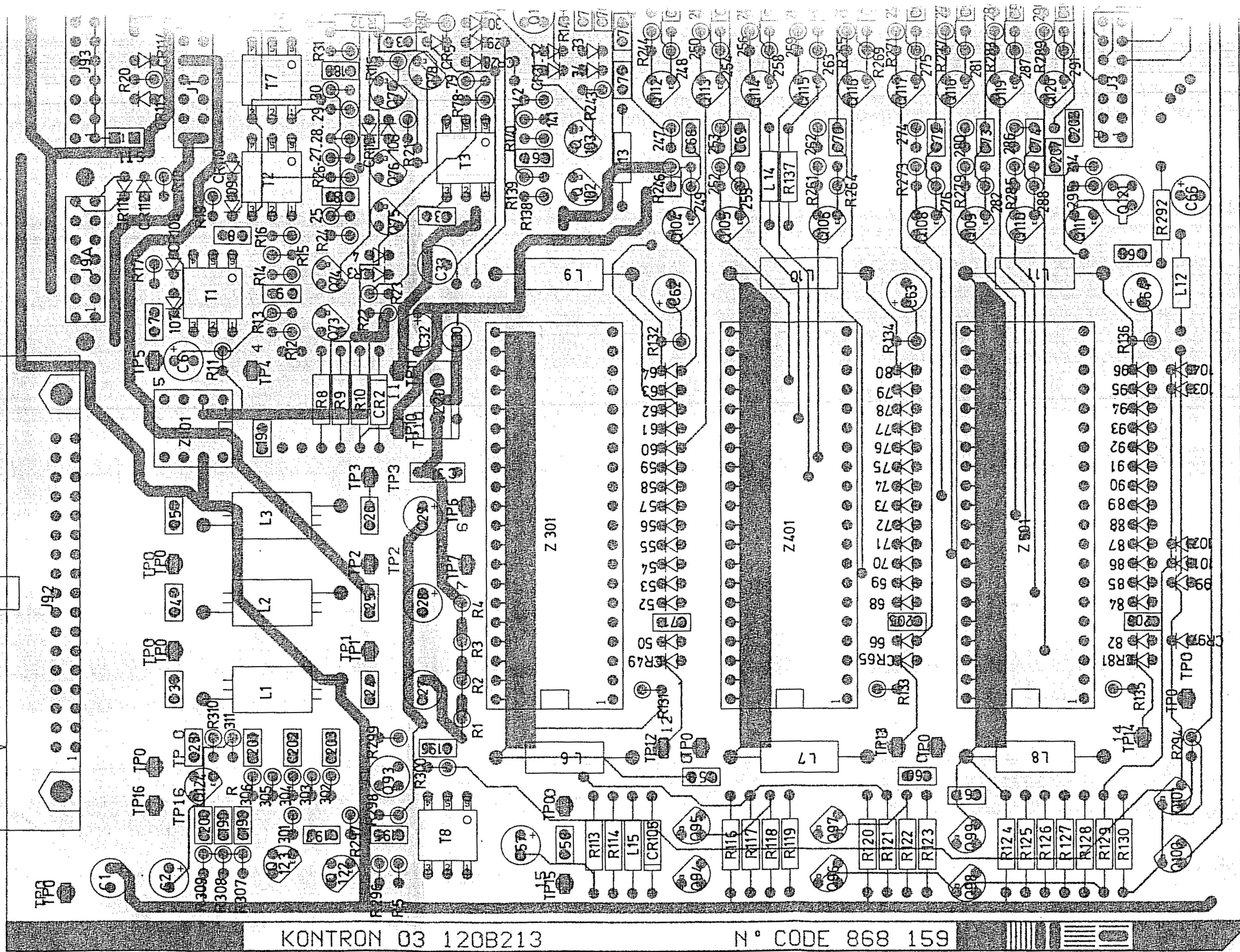
ATFOC	GND	J92	J93	J9A
J91	J92	J93	J9A	J9A
5	7	7	7	7
7	9	9	9	9
9	11	11	11	11
11	13	13	13	13
13	15	15	15	15
15	17	17	17	17
17	19	19	19	19
19	21	21	21	21
21	23	23	23	23
23	25	25	25	25
25	27	27	27	27
27	29	29	29	29

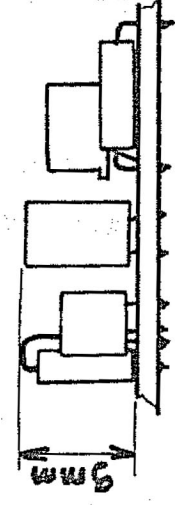
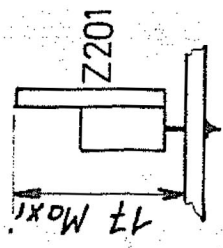
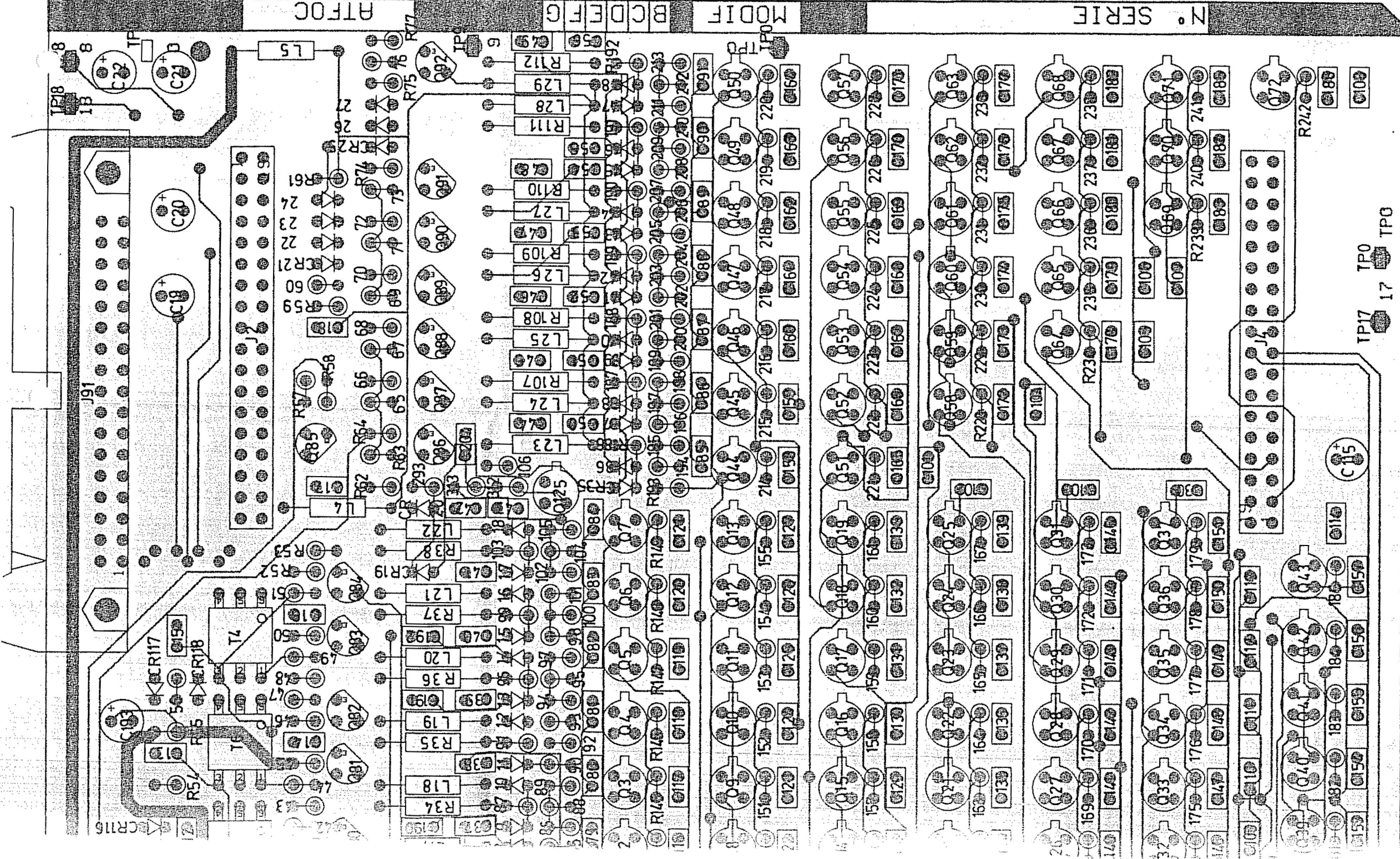




J 3 SEE UPPER
LEFT CORNER

TO SMD PRINT

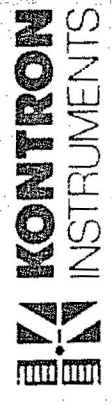


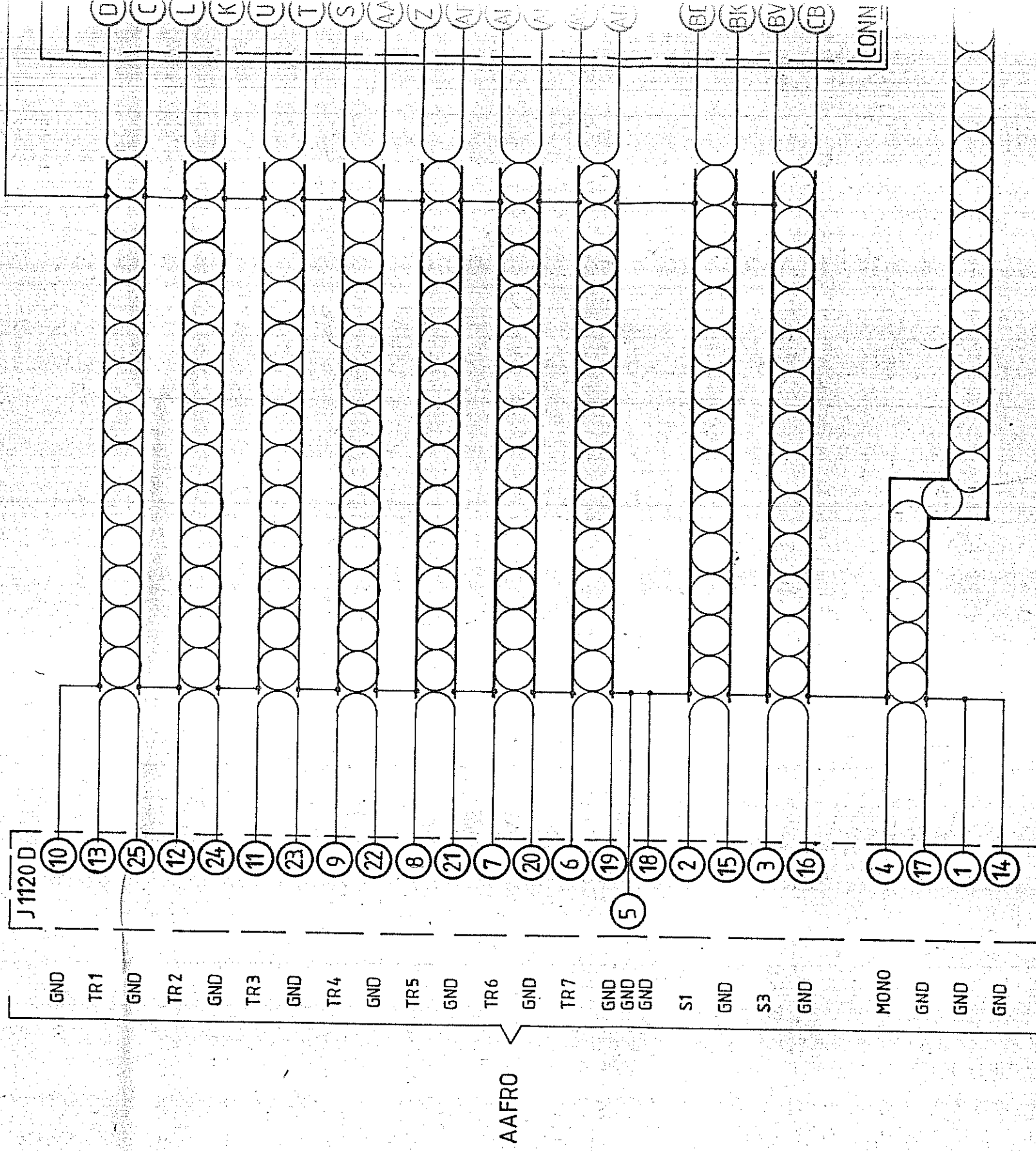


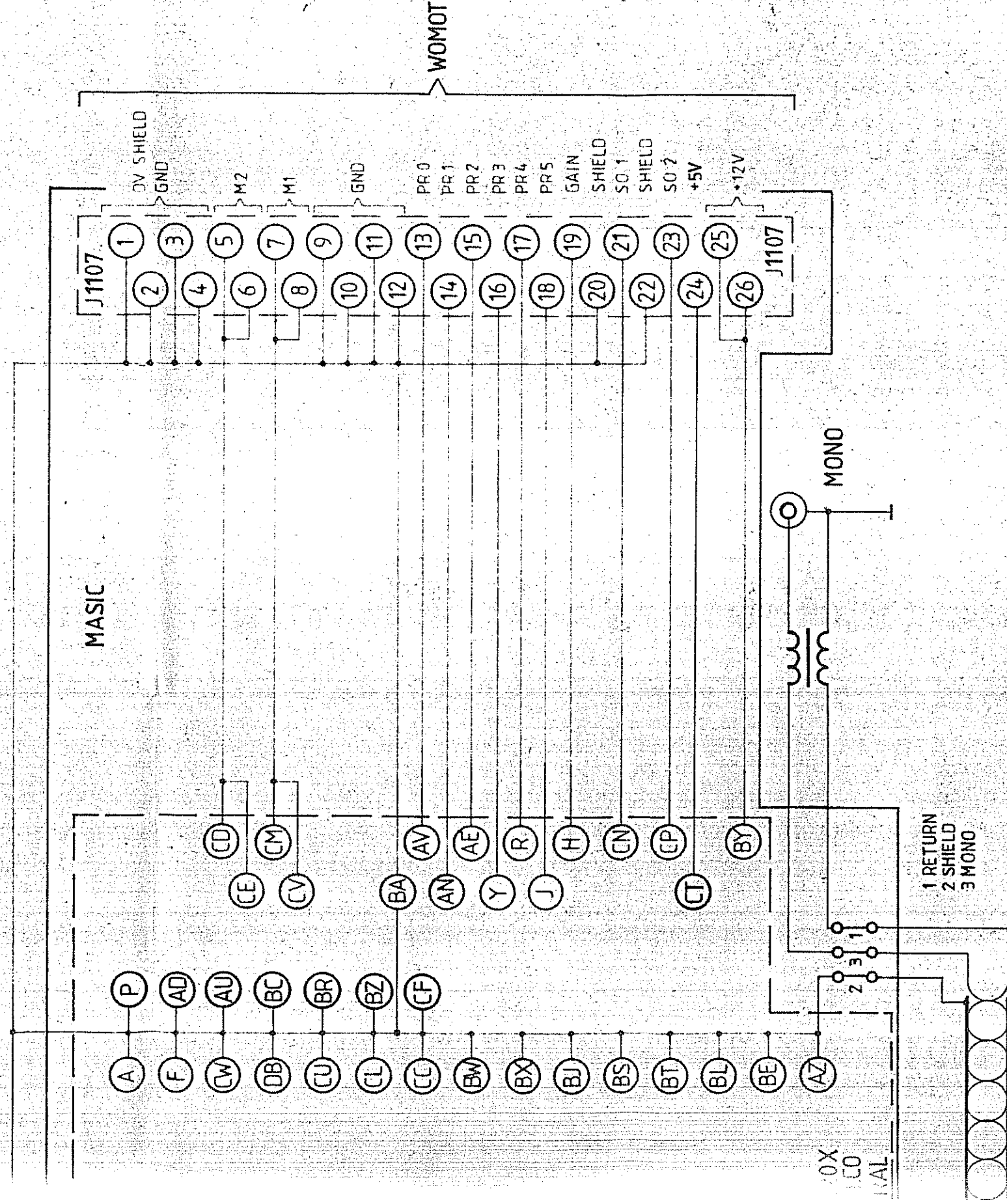
HAUTEUR MAXI DES
COMPOSANTS. 9mm
(sauf Z101 à Z501)

Matr. n°	Protection
Traitement	Poids
Intérêt Général	Echelle 2/1
Rep.	N° d'Ensemble
Elab. par	Q'de par Ensemble
Date : 24.9.87	PCA ATFOC
Verifié : 28.9.87	868132
N° SERIE	
03_120 c313	
1	
21.10	
87	
Date	

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite



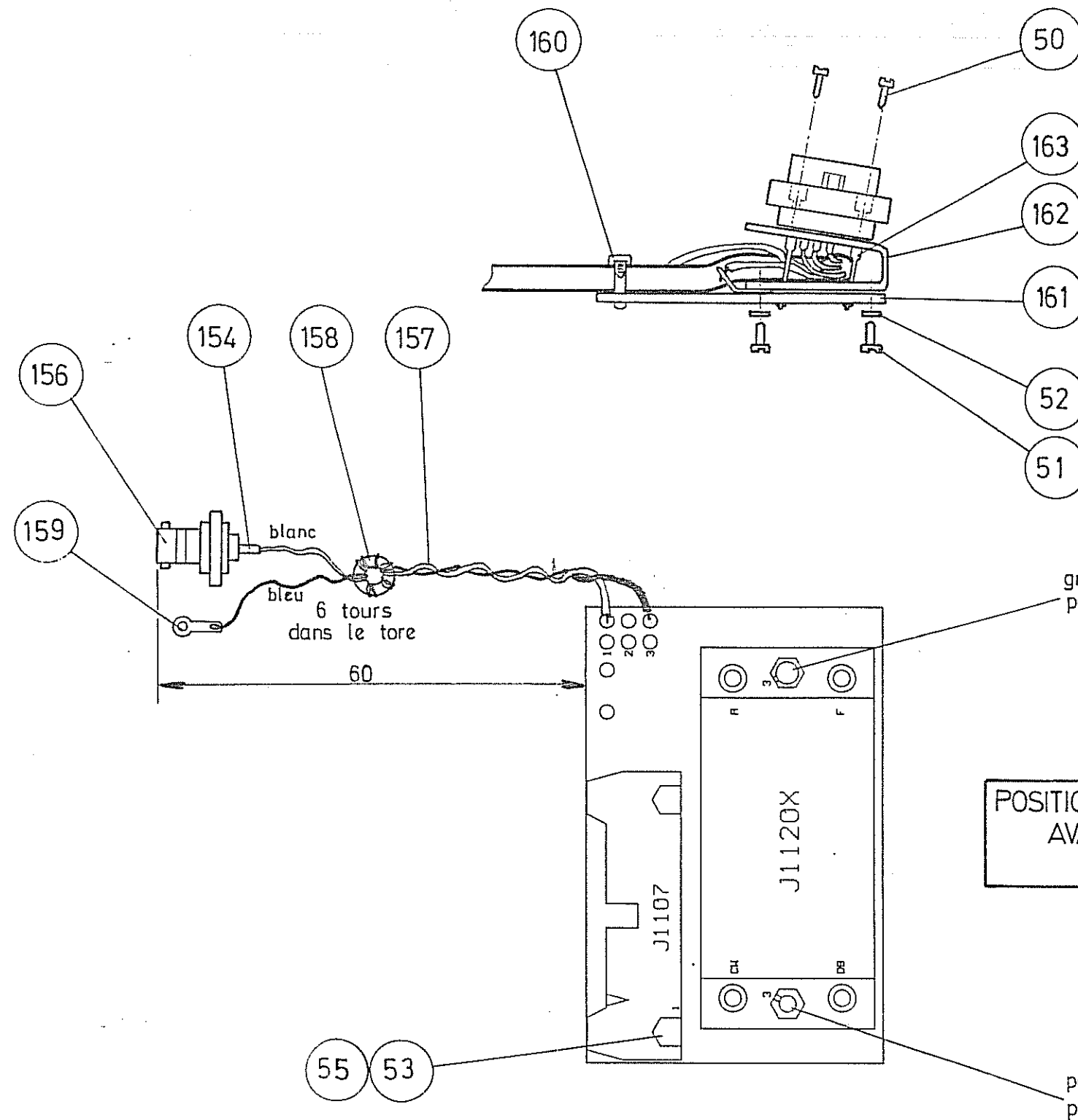
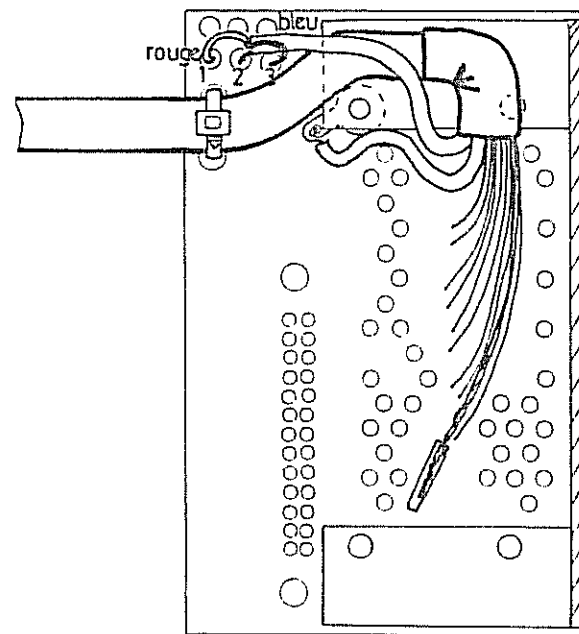




Legend:
 precision resistors
 5% - 1% -
 unnamed diodes
 type 1N4148
 single drawn gate's
 GND Pins 7, 8 or 10
 VCC Pins 14, 16 or 20

Rep.	N° d'Ensemble	Die par Ensemble	Matière	Protection
Etabli HK	SIGMA 1AA		Traitement	Poids
Date 3.12.86	MASIC		Tolérance Générale	Echelle
Vérifié 	PCA 868 167		KONTRON INSTRUMENTS	
		1	03120 014	1 05.87
				Edr. Date

Le document est la propriété de Roche et ne peut être reproduit ou communiqué sans autorisation écrite.

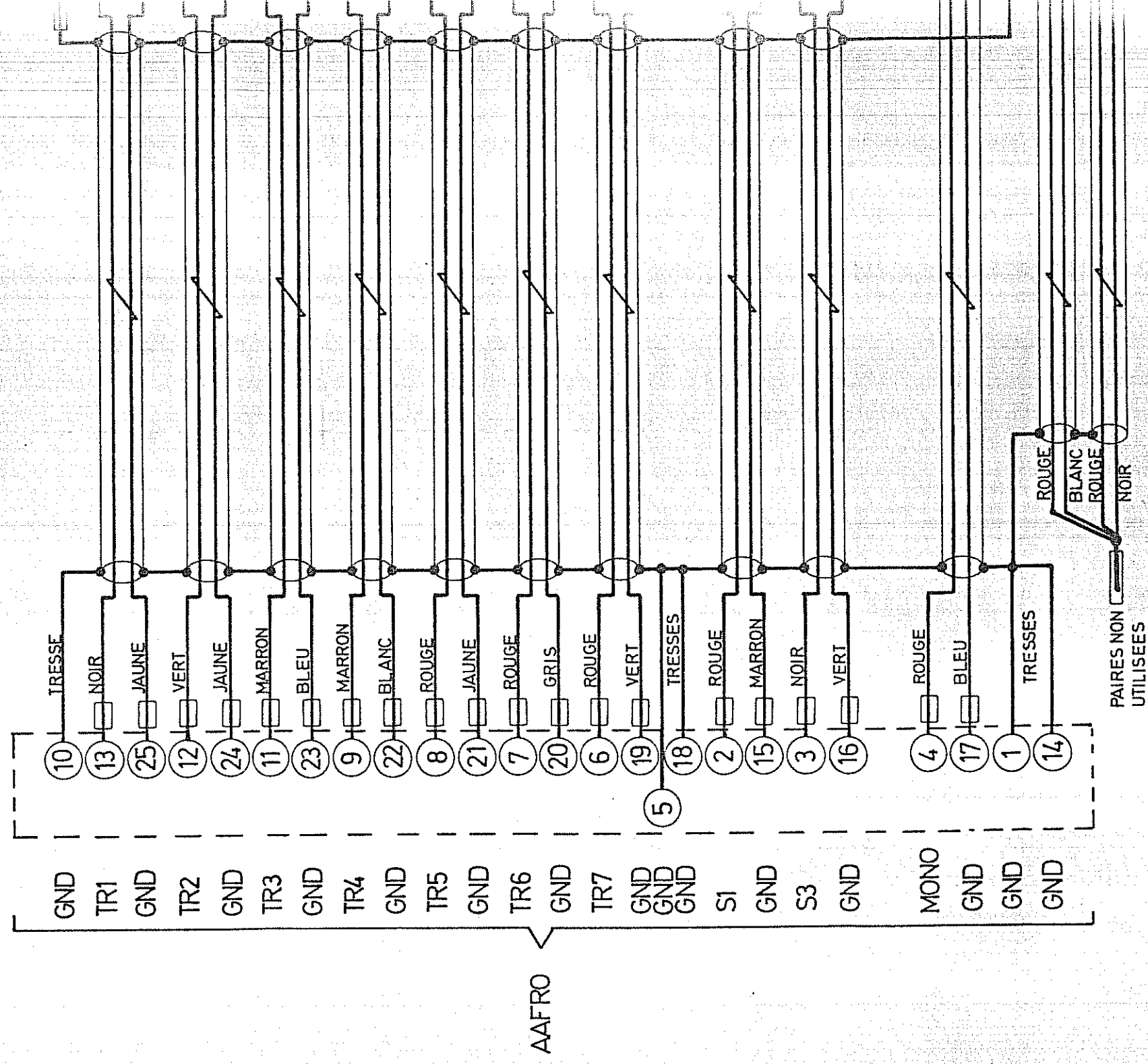
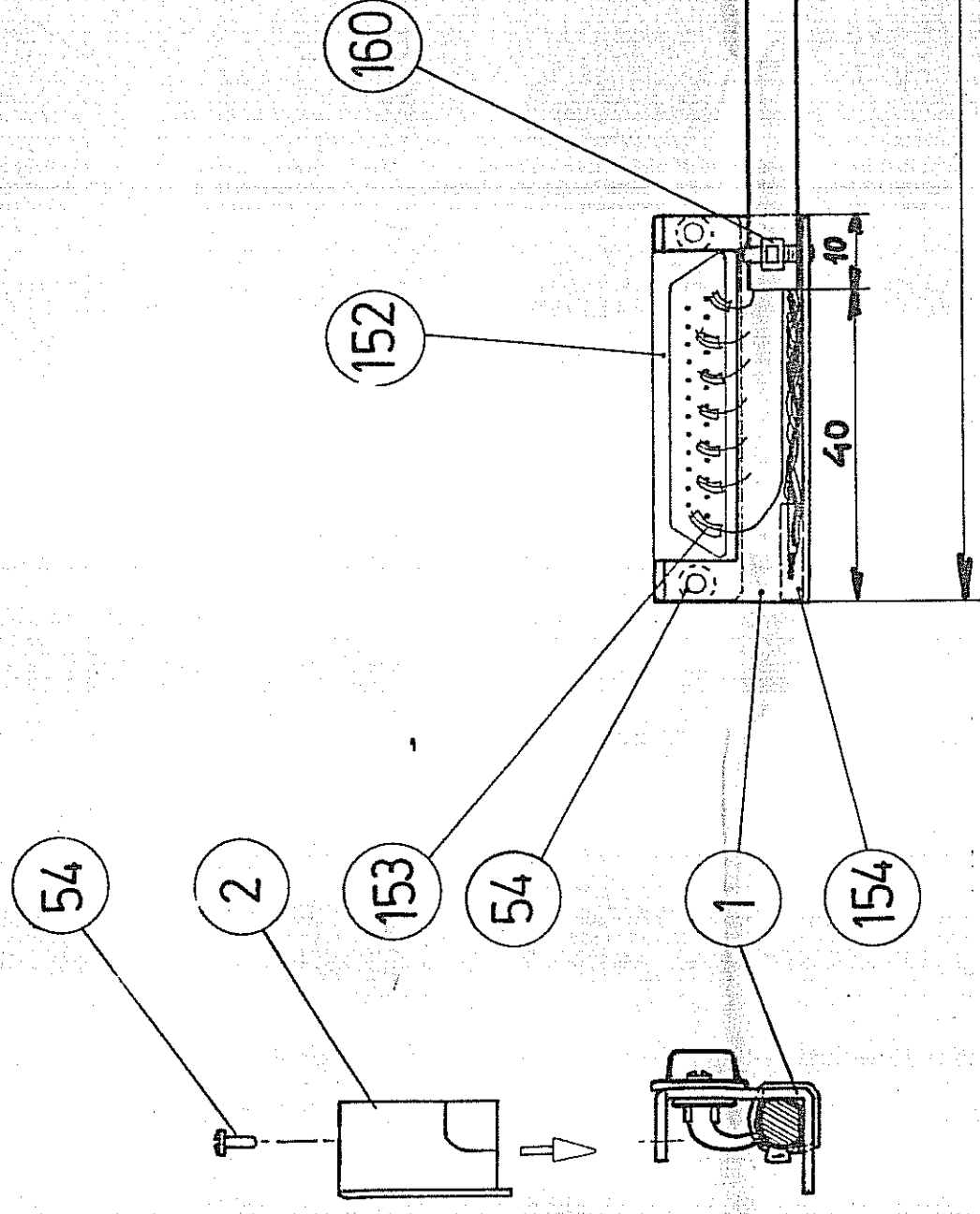


POSITIONNER LES DETROMPEURS
AVANT SOUDURE
DE J1120

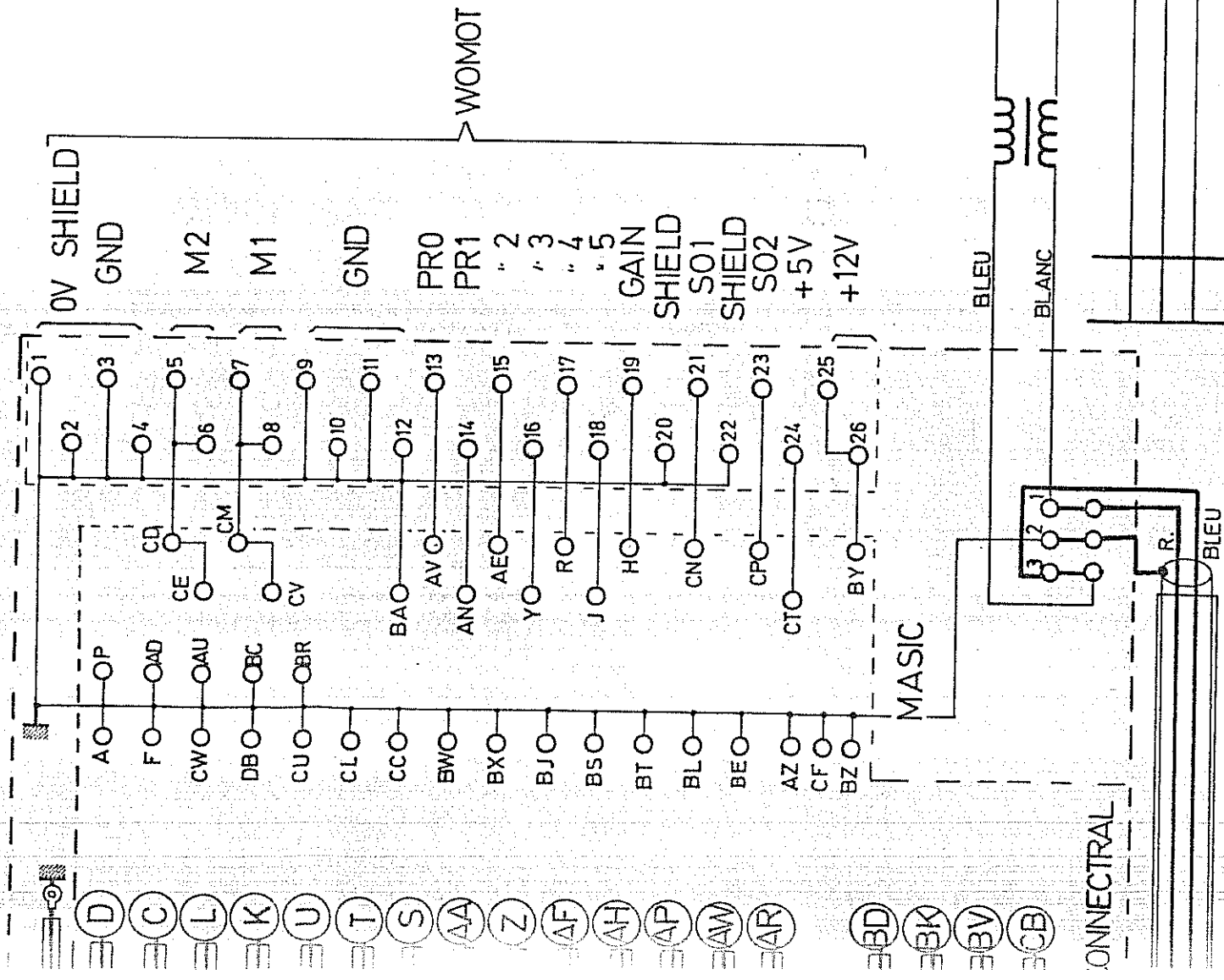
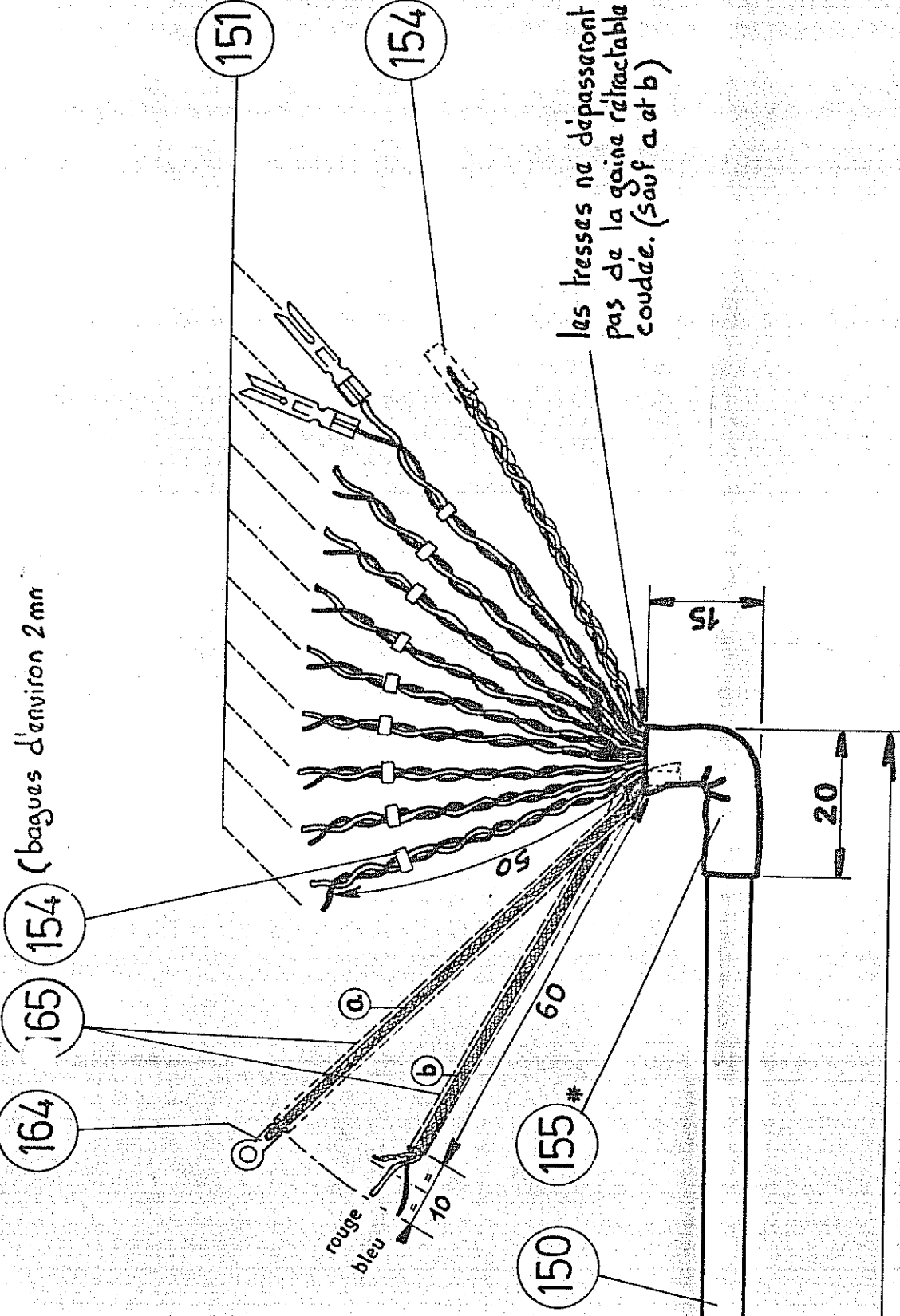
55 53

Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
			Traitement	Poids
			Tolérance Générale	Echelle 1/1
Etabli: B. B. B.	SIGMA 1AA			
Date : 2-04-87	PCA MASIC			
Vérifié: 16-06-87	868167		03-120B314	
Planche 1/2			1	30.6 87

MODIFICATIONS 09/01/87 2-04-87 1/1 Validé le 30.6.87 JCB

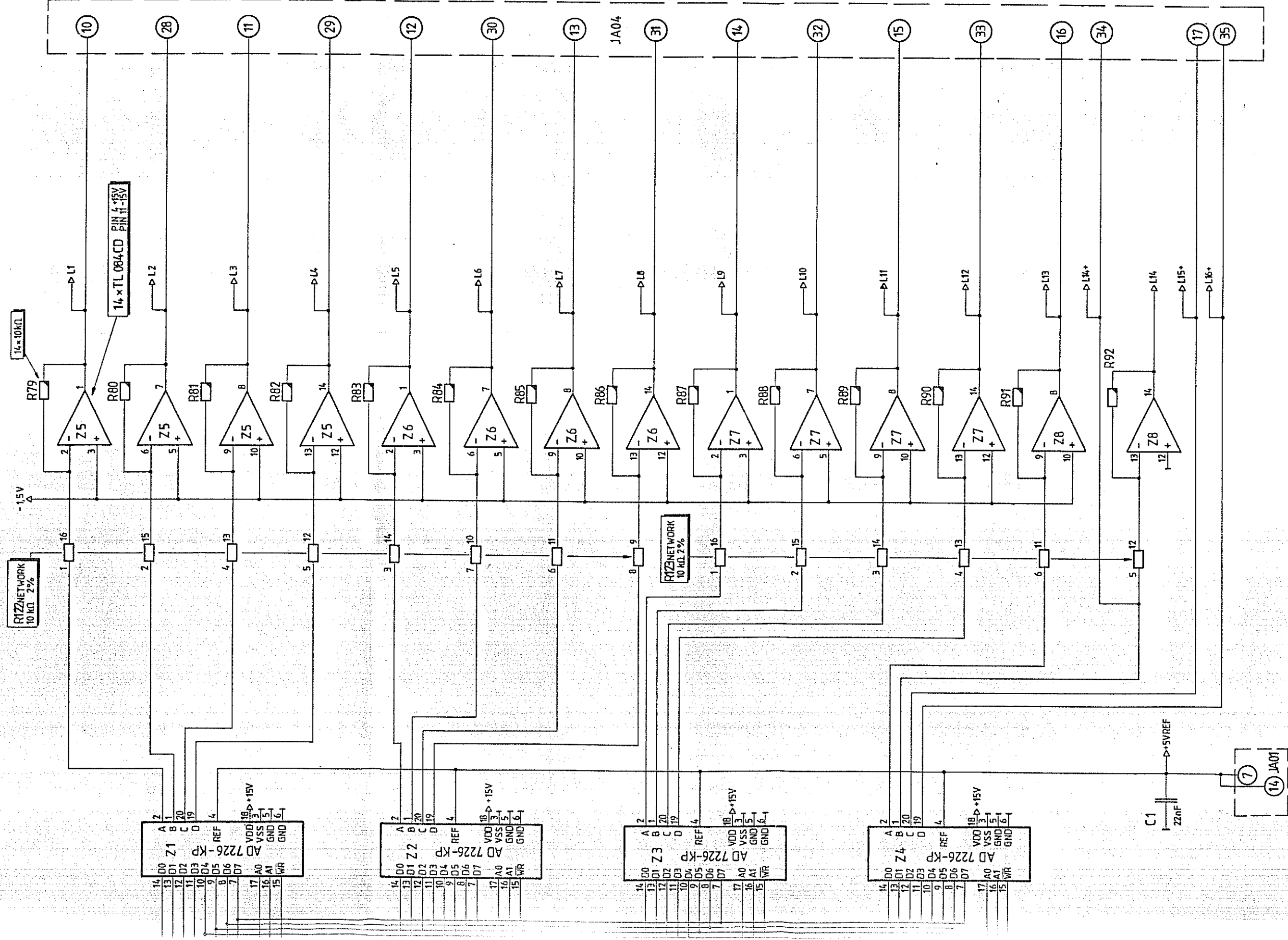


(bagues d'environ 2 mm



155 * Gaine rétractée et coudée à chaud. (angle à 90°)

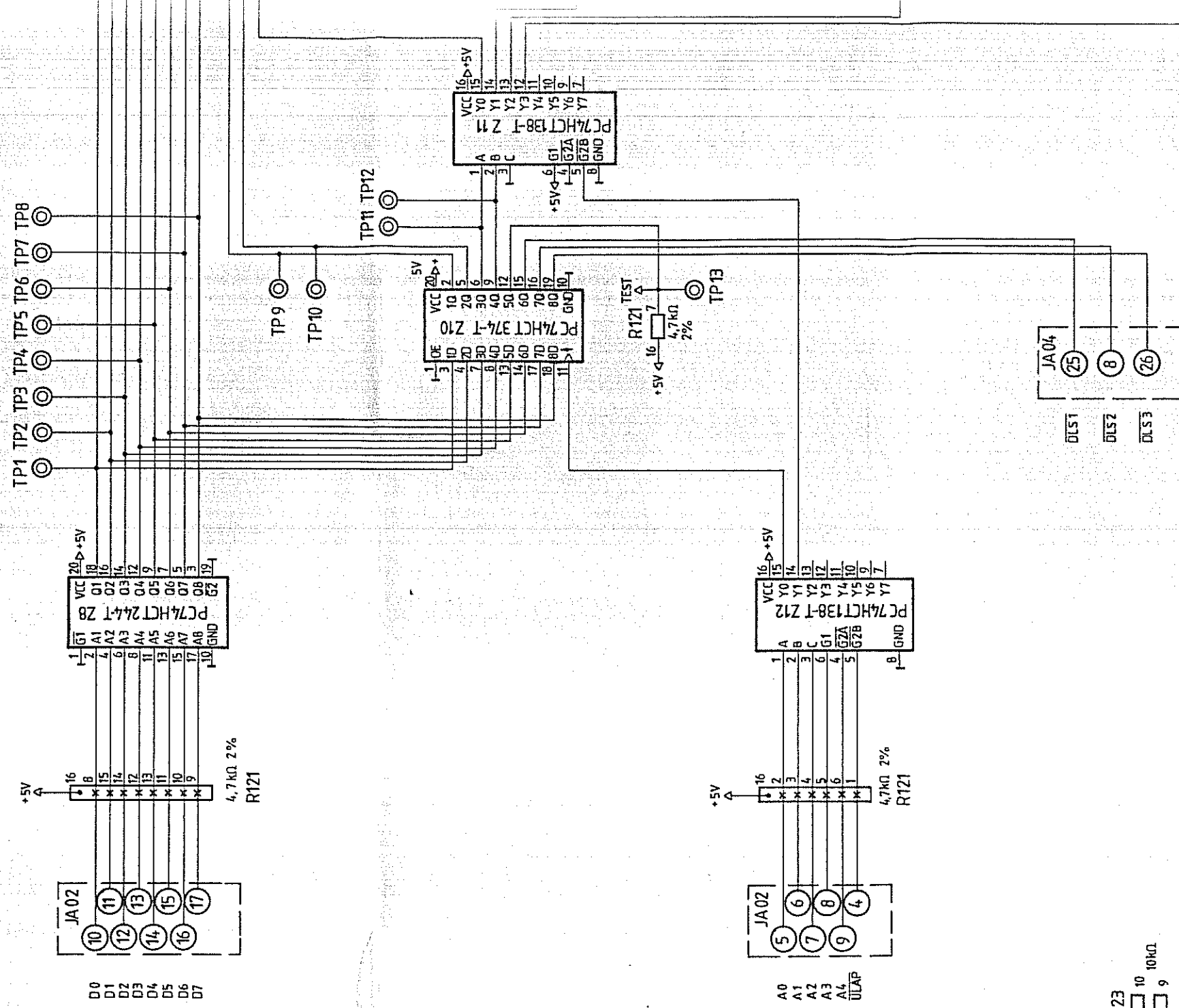
Matériau		Protection
Traitement		Poids
Tolérance Générale		Echelle
N° d'Ensemble		01 par Ensemble
SIGMA 1 AA		
Câblage PCA MASIC		
868167		
Plancha 2/2		
Date : 2-04-87		
Vérifié : 2/2		
03-120c314		
1		
30.4		
87		
Edi.		Date
Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite		

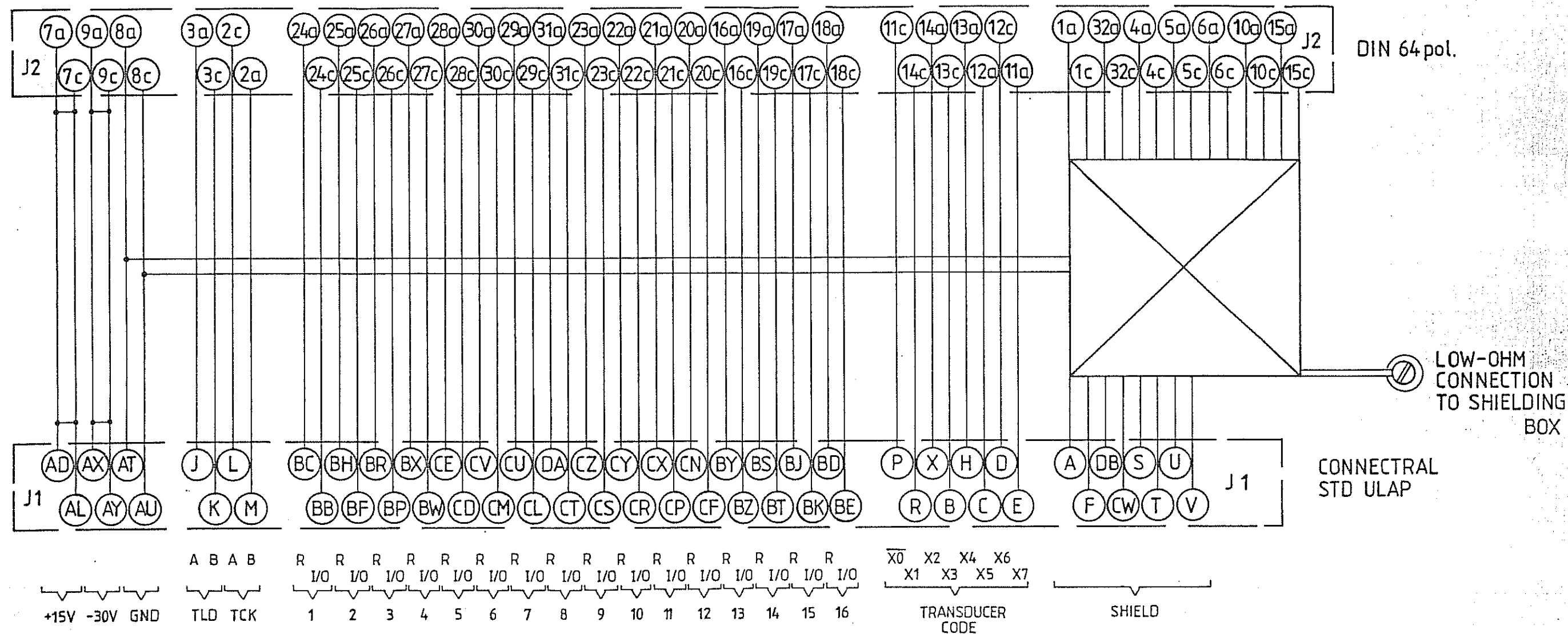


RESISTORS 1%
NETWORK 2%

Matrice :	Protection :
Traitement :	Poids :
Tolérance Globale :	Echelle :
Out par Ensemble	
Rep. N° d'Ensemble	
Etabli : HK	SIGMA 1AA
Date : 17.7.87	AIFOC SMD Sheet 1
Vérifié : JS	PCA 873918
	03 120 N 016
	2
	2

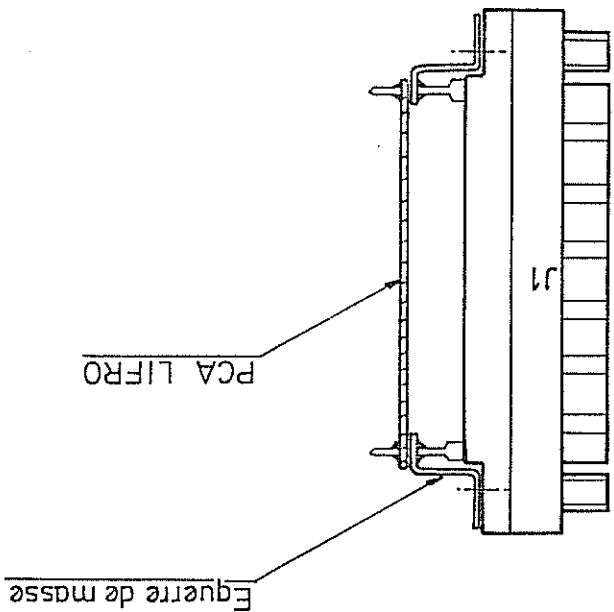
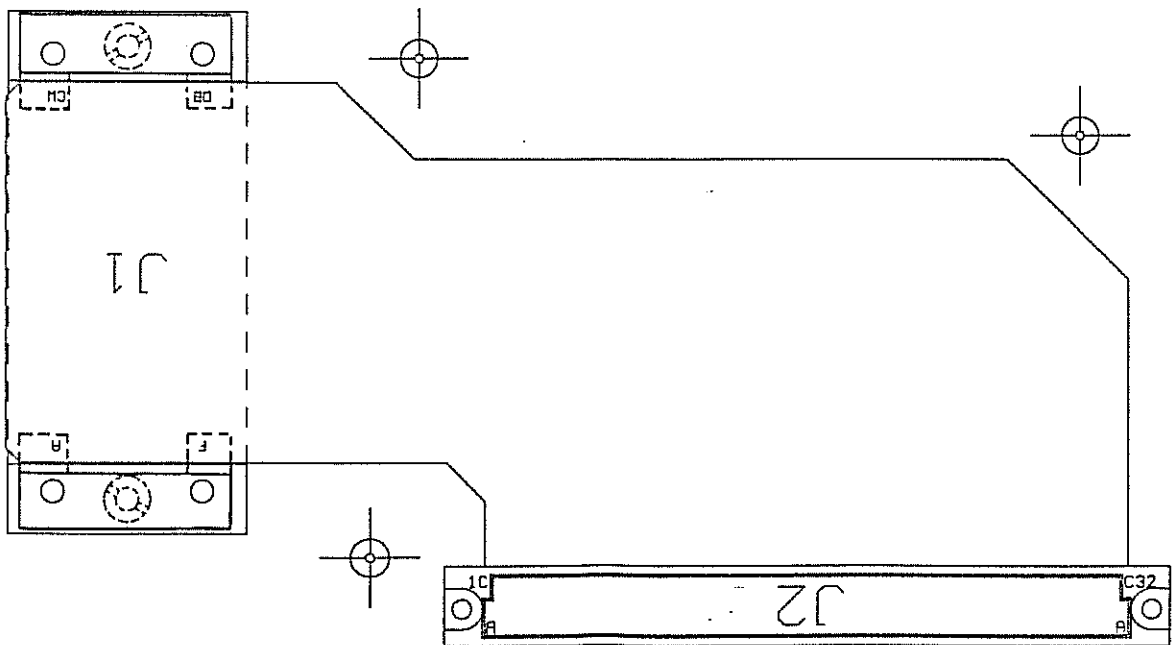
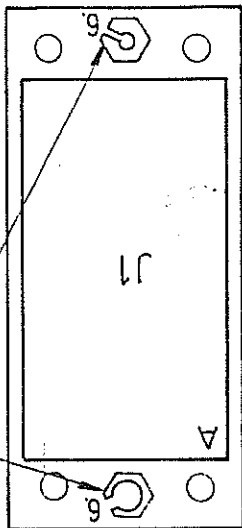
KONTRON
INSTRUMENTS






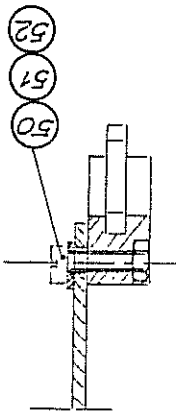
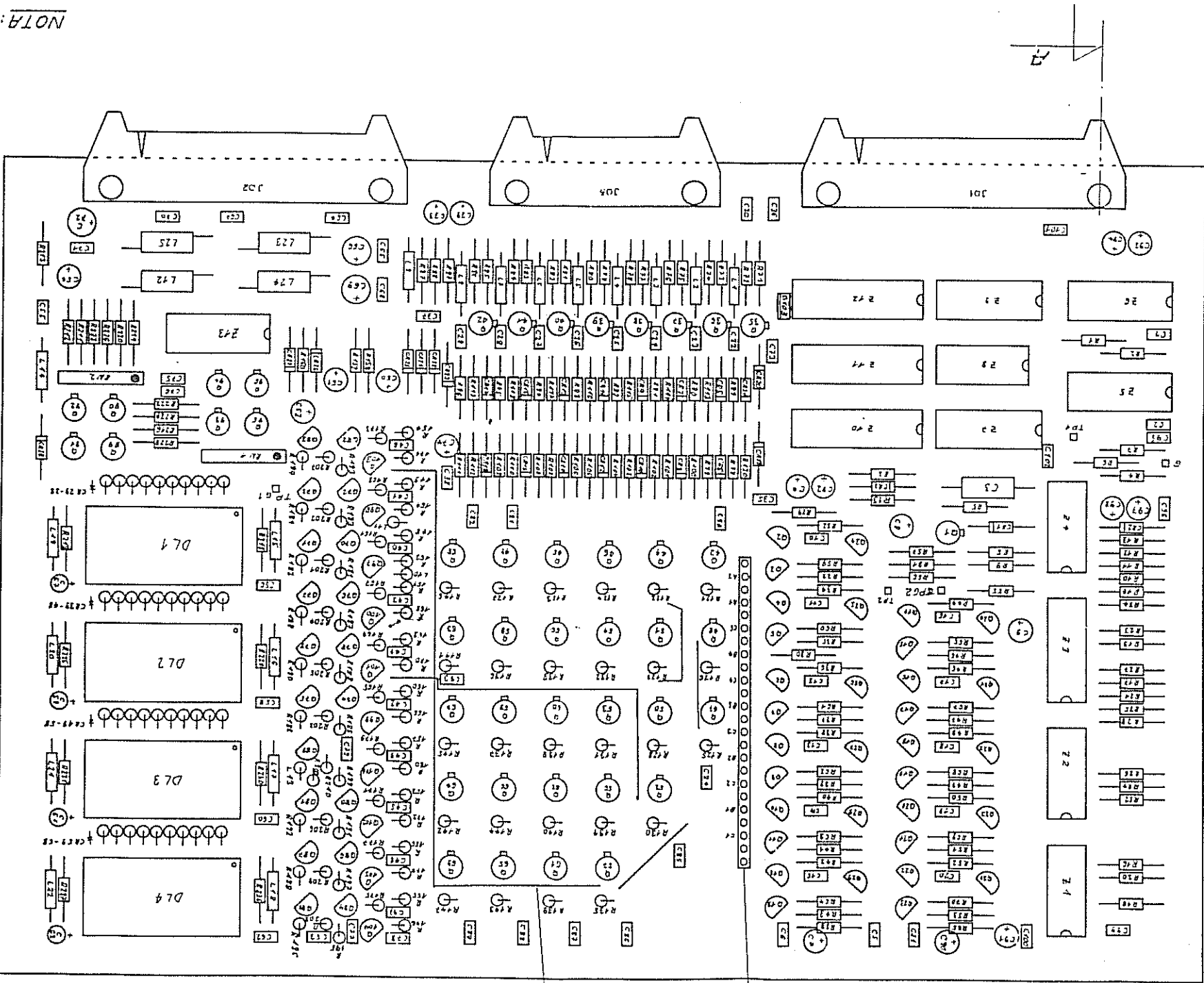
Rep.		N° d'Ensemble		Qté par Ensemble	
Etabli :	HK	SIGMA 1			
Date :	9.12.85	LIFRO			
Vérifié :	FM	852 791			
Matière :				Protection :	
Traitement :				Poids :	
Tolérance Générale :				Echelle :	
				3 8.87	
				03 120 003	
Ce document est la propriété de Kontron Instruments. Toute réimpression ou communication sans autorisation écrite est formellement interdite.					

Positionner les détrompeurs en 6 avant soudures.



Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite					
Rep.		N° d'Ensemble		0 ^{le} par Ensemble	
Matière	Protection	Poids	Echelle	Tolérance Générale	
 KONTRON INSTRUMENTS					
		Edi.		Date	
		1		03-12-85	
		434		01 86	
		SIGMA 1		PCA LIFRO	
		852791			
		Verifié :		Mois : 03 / 85	
		Date :		5-12-85	
		Etabli :		JF - T	

50-002-0303 BIOELECTRONIQUE		Date: 25.1.82 ABC:	N° d'ordre: PCA T FOC 834556
Auteur:	Rédacteur:	Vérificateur:	Approuvé:
Fonction:	Poste:	Echelle: 2/1	N° de plan:



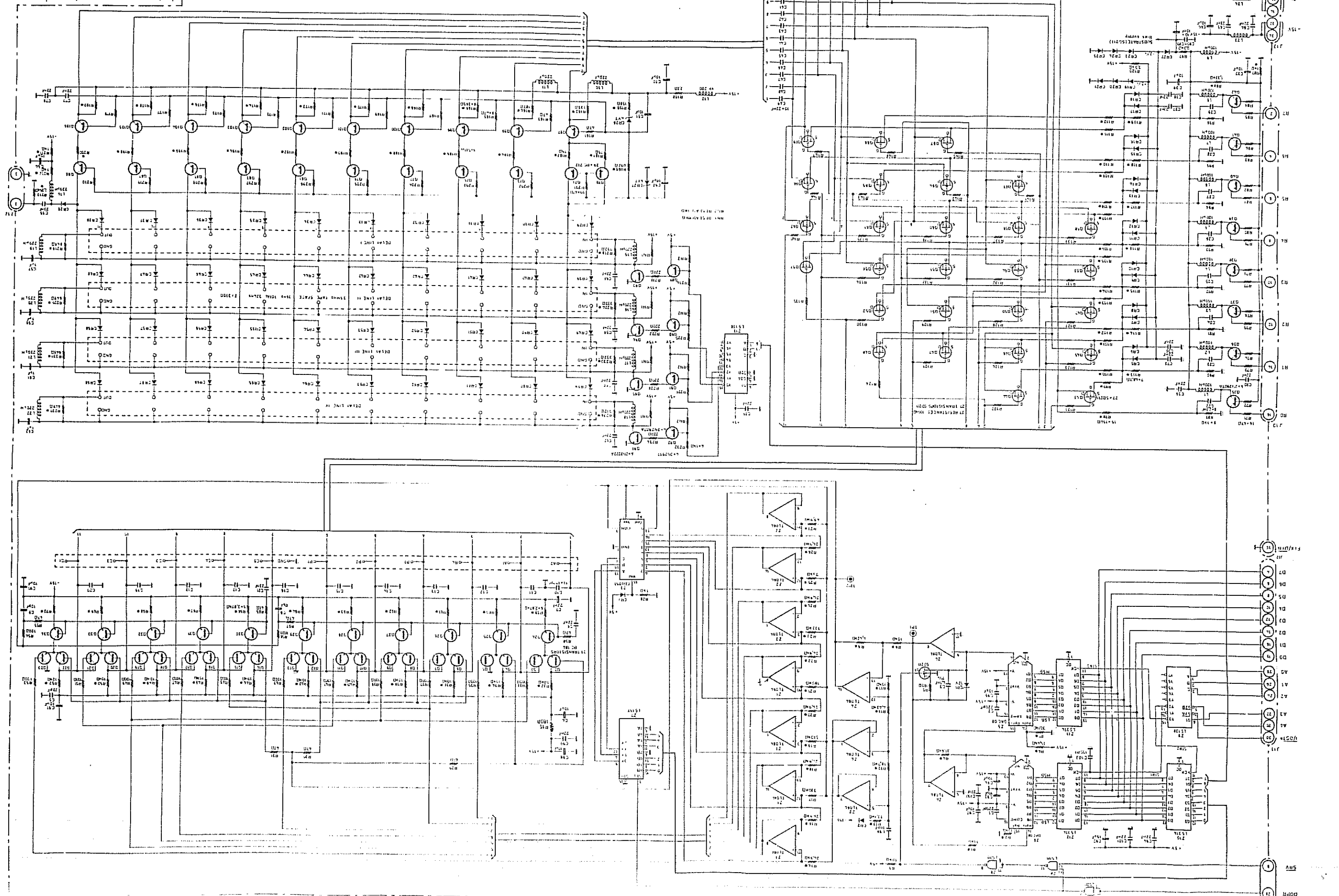
Section A

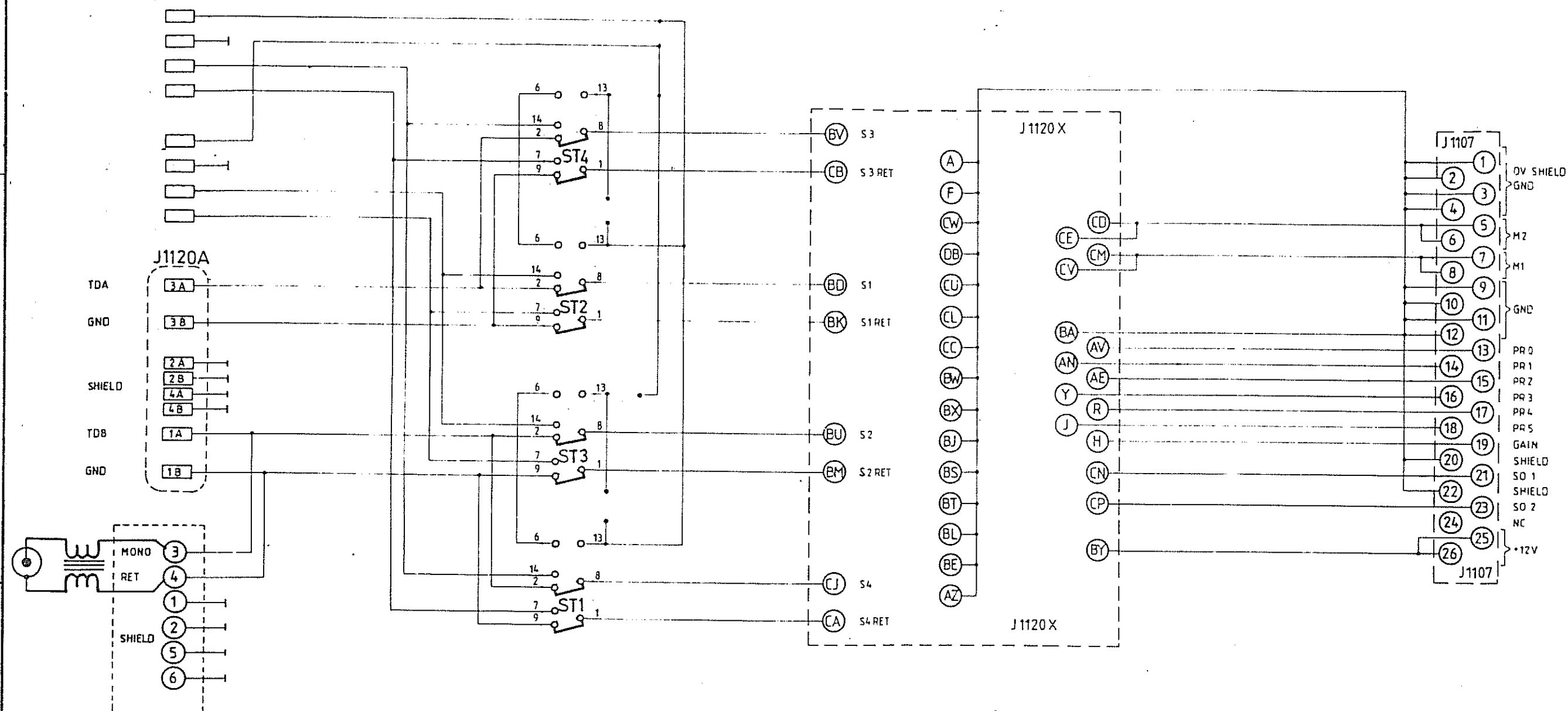
fil de wrapping câble côté implantation

NOTA: Si cablage à la vue, protéger les 2 glissières éliminées non épinglées

50 002 0003	
BOELECTRONIQUE	
ROCHE	P.A. T. FOC. 21.518
DATE	10.03.63
REVISION	
DESIGNER	
CHECKED	
APPROVED	

NOTE: LES MODIS NON REVERSES SONT DES INVERTEURS





Rep.	H ⁿ d'Ensemble	Ord. par Ensemble	Modèle :	Protection :
Etabli :	SIGMA 1		Traitement :	Points :
Devis :	INSEC B		Tolerance Générale :	Echelle :
Vérifié :	863 491		KONTRON INSTRUMENTS	
			03 120 C010	2
			10.10.90	90

Dieses Dokument und die darin enthaltenen Informationen sind unser geistiges Eigentum und dürfen ohne unsere schriftliche Genehmigung auf keine Weise an Dritte weitergegeben werden. Jegliche Vervielfältigung oder Verbreitung ist ohne unsere schriftliche Genehmigung strafbar.

Hinweise ① Valid. le 8.9.86 GFD 1A) DC N°03-83-280 3/10/80 B41 ② Valid JB le 10.10-90

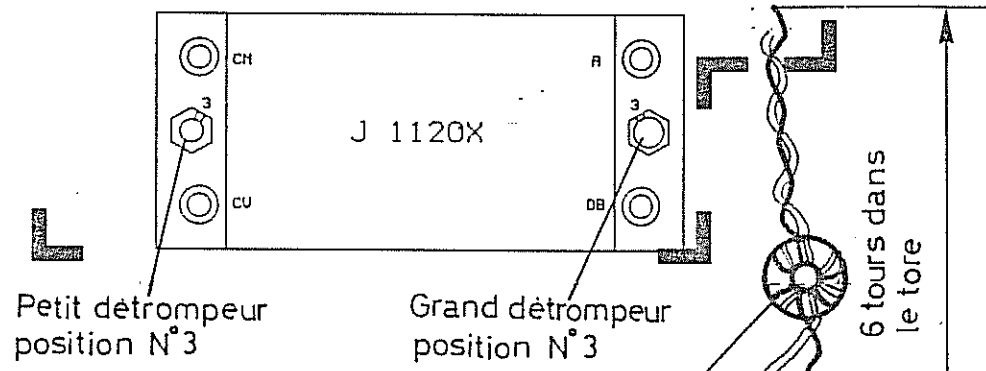
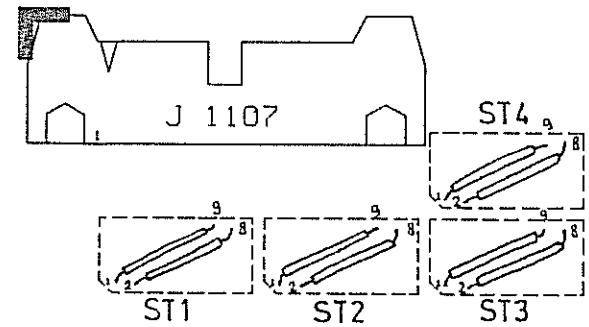
Ce document est la propriété de Kontron Instruments. Toute réimpression ou communication sans autorisation écrite est formellement interdite.

A

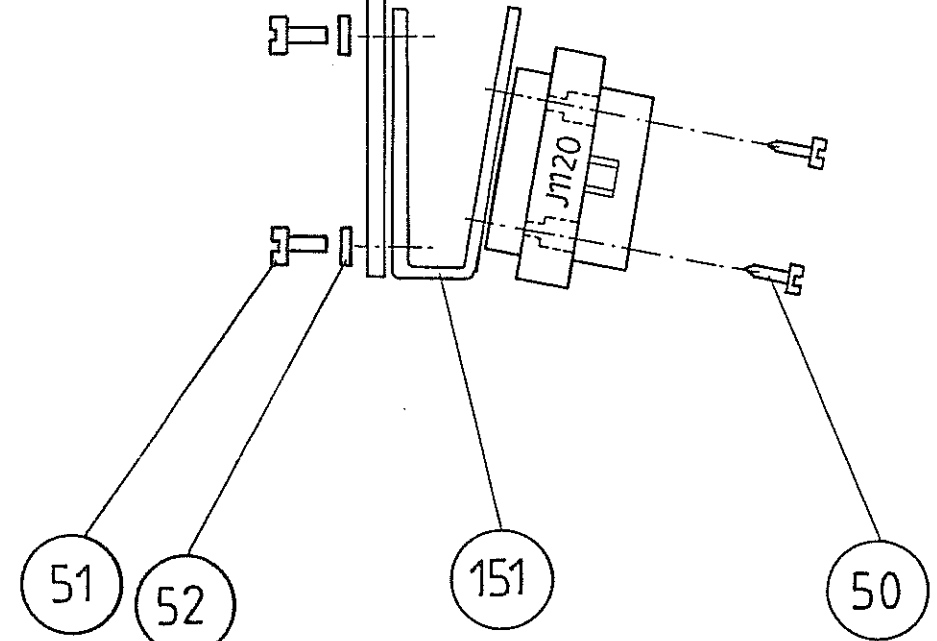
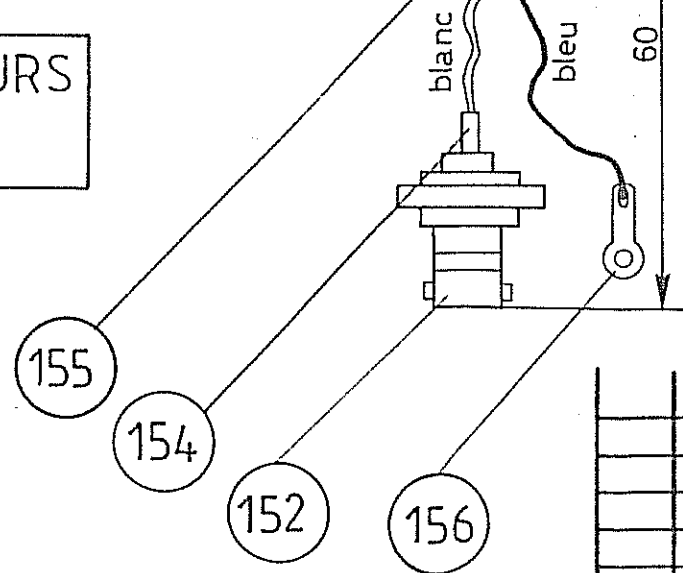
B

C

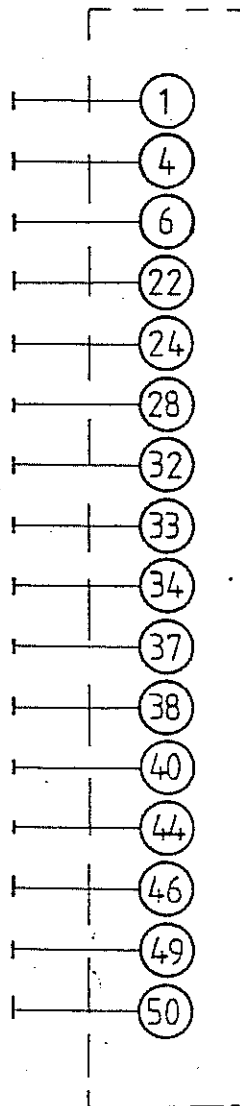
D




POSITIONNER LES DETROMPEURS
avant soudures de J1120X



Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli : M-S	Date : 7/03/86	Vérifié : 16-05-86	Traitement	Poids
PCA INSEC 863 491			Tolérance Générale	Echelle 1
K KONTRON INSTRUMENTS			0,3120, B3,10	2 10-10 3
			Edi.	Date



Rep.		N° d'Ensemble		Qté par Ensemble		Matière :		Protection :	
						Traitement :		Poids :	
						Tolérance Générale :		Echelle :	
Etabli :		SIGMA 1							
Date :									
12.84		ANREF				03 122 001			
Vérifié :									
10-05-85						1 403 09-86 Edi. Date			

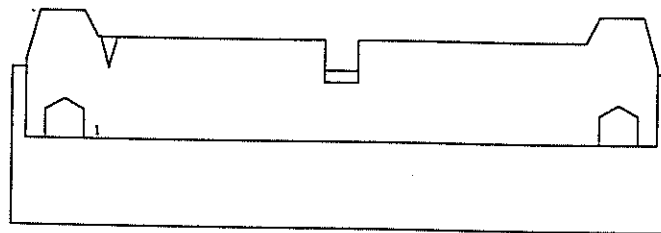
A

B

MODIFICATIONS

(1) valide le 8.3.85

IMPLANTATION ANREF



Matière :

Protection :

Traitement :

Poids :

Tolérance Générale :

Echelle : 1/1

Rep.

N° d'Ensemble

Qté par Ensemble

Etabli :

Date :

27.02.85

Vérifié :

10.6.85

SIGMA 1

PCA ANREF

implantation 856509


KONTRON
INSTRUMENTS

03.122A.301

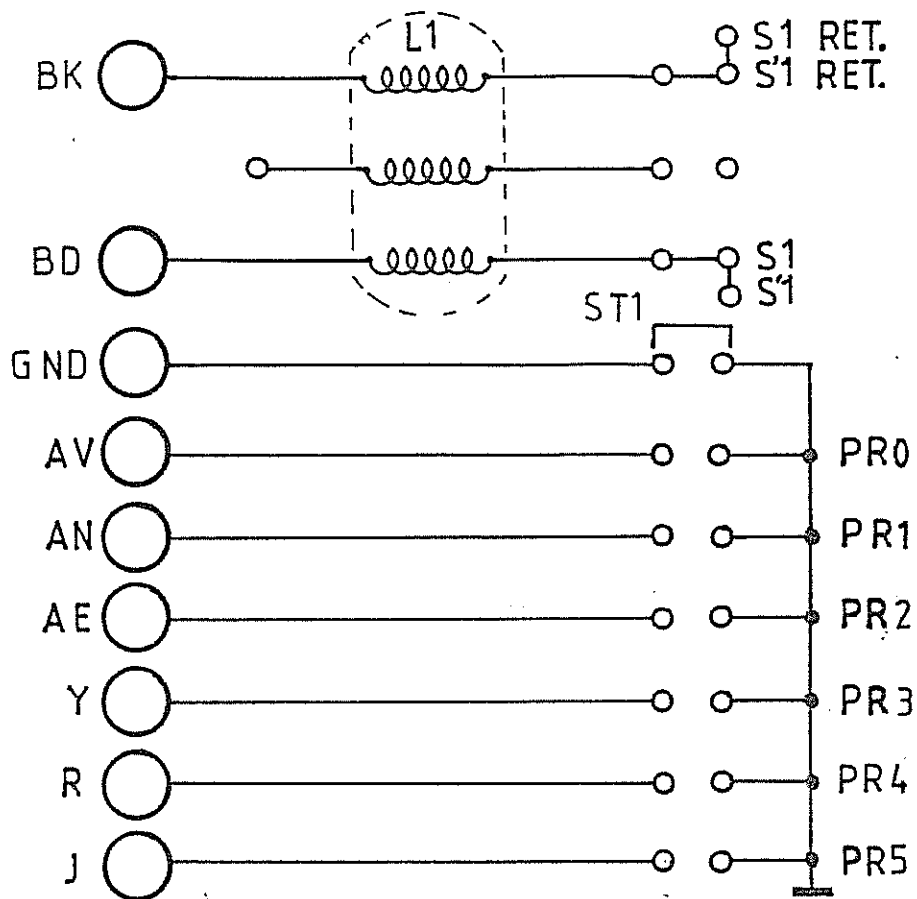
1

8.3
85

Edi.

Date

MODIFICATIONS



Matière :

Protection :

Traitement :

Poids :

Tolérance Générale :

Echelle :

Rep.

N° d'Ensemble

Qté par Ensemble

Etabli :

H. M.

SIGMA 1SC

Date :

9.7.84

PCA BX CODE

Vérifié :

E.R.

schema

854 921

ROCHE
bioélectronique
KONTRON

03.170.A001

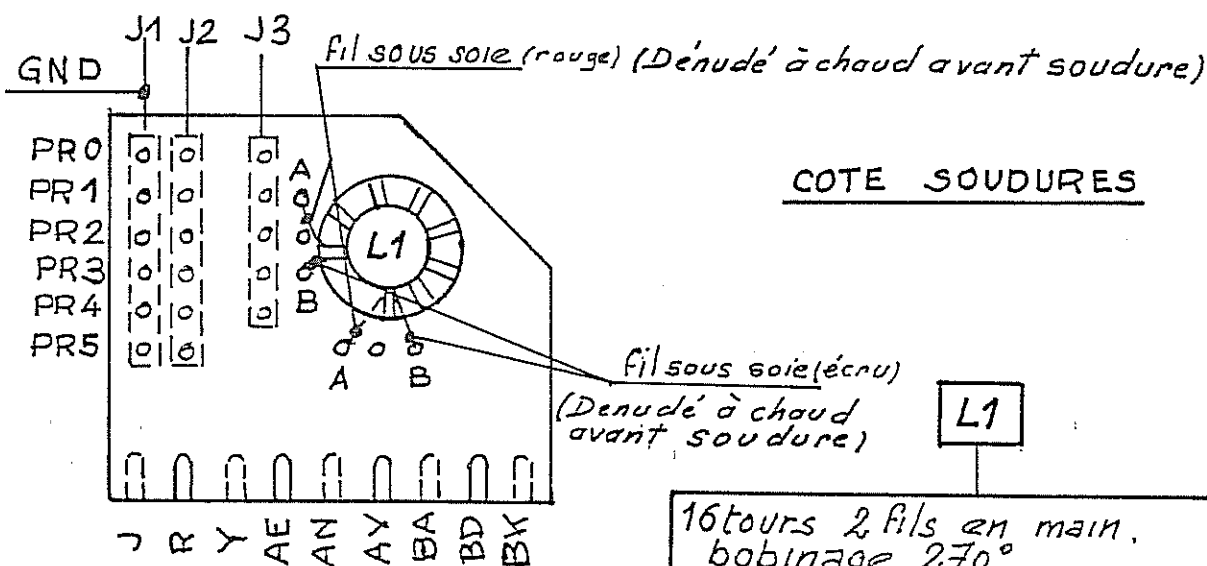
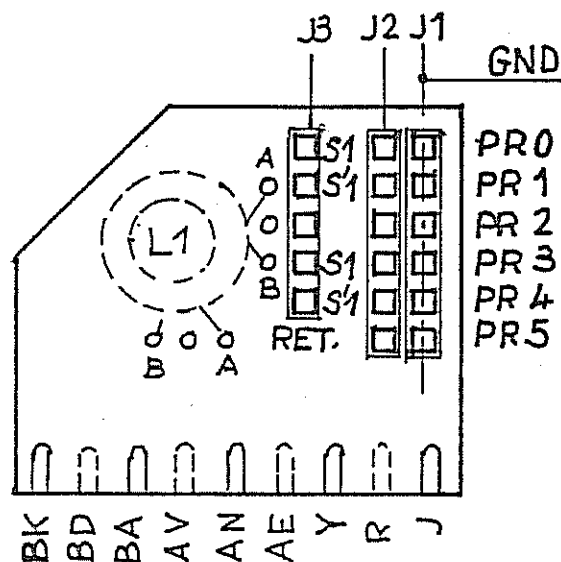
Edi.

Date

MODIFICATIONS OB/Ajoute vie coté soudure (C.I.) (10.12.84) OC/Precisé
couleurs des fils A et B

J1-J2 BORNES BERG 6 POINTS,
J3 " " 5 POINTS,

L1: MONTÉ COTÉ SOUDURES



16 tours 2 fils en main,
bobinage 270°
Fil A → 30/100 sous soie,
thermosoudable (rouge)
Fil B → 30/100 sous soie
thermosoudable (écru)
Tore 3H2 code 847887

Matière :

Protection :

Traitement :

Poids :

Tolérance Générale :

Echelle : 2M

Rep.

N° d'Ensemble

Qté par Ensemble

Etabli :

SIGMA 1SC

Date :

10.12.84

PCA BX CODE

Vérifié :

RE

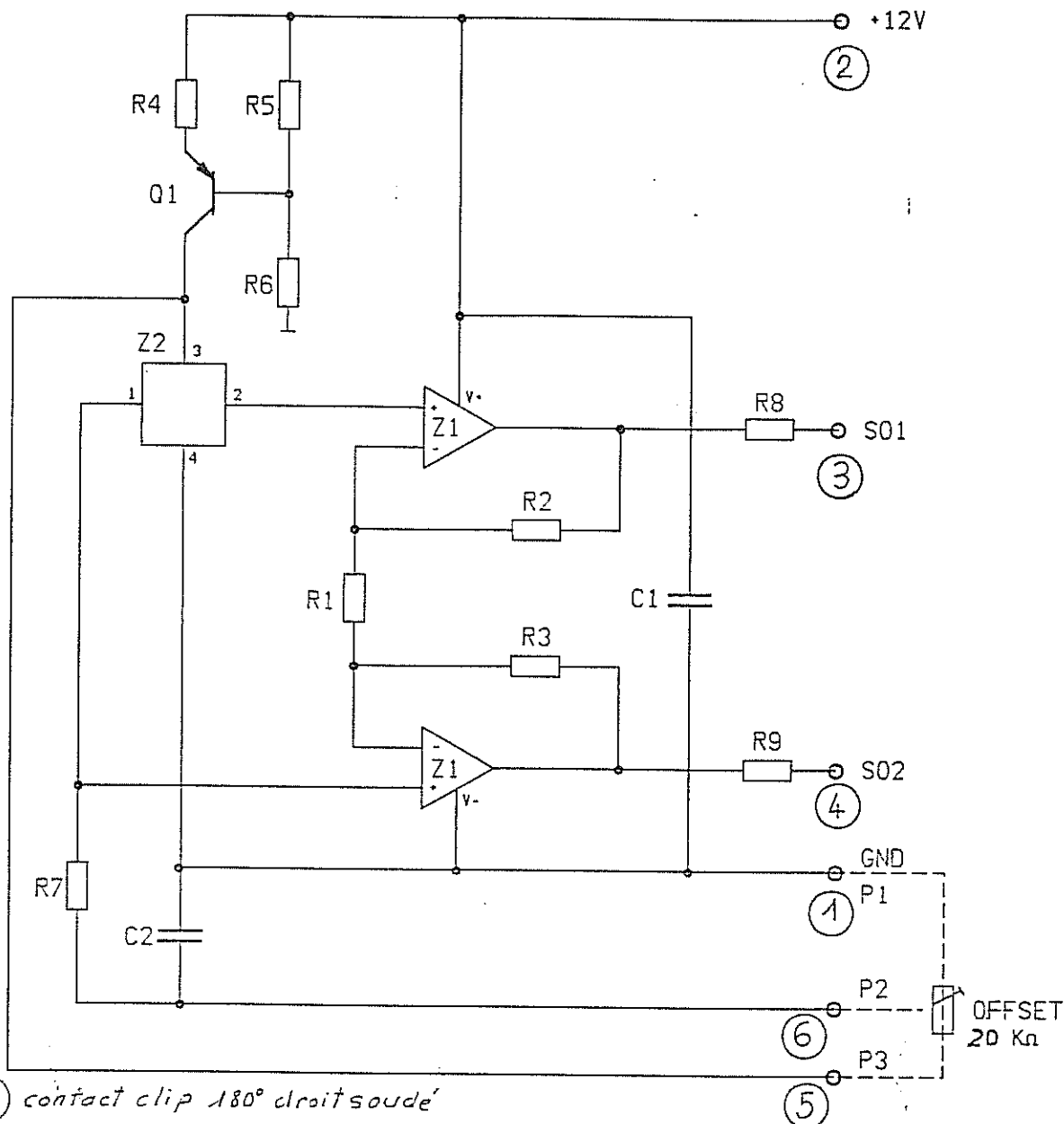
implantation 854.921

KONTRON
INSTRUMENTS

03.170A.301

22
1985
Edi. Date

1.A; Nouveau plan (9.8.90/CS) ② Validé le 20.9.90 ③ Validé le 26.10.90



① à ⑥ contact clip 180° droit soudé

R à 2% --> ± 100 ppm
R à 20% --> ± 500 ppm

C1 = 10nF 20% } X7R
C2 = 10nF 20%

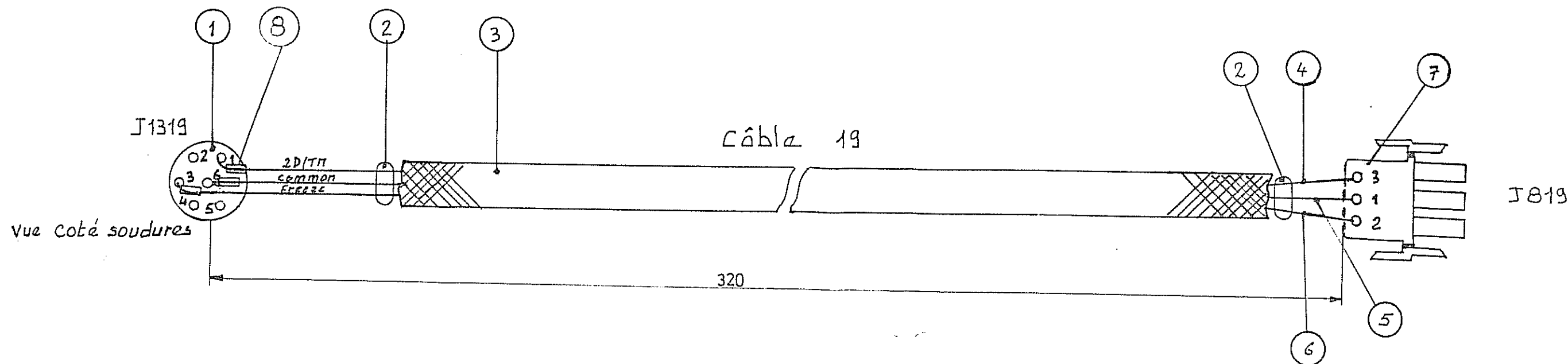
R1 = 2.2KΩ 2% / 10 mW
R2 = 10 KΩ 2% / 10 mW
R3 = 10 KΩ 2% / 10 mW
R4 = 330 Ω 2% / 10 mW

R5 = 1.2KΩ 2% / 10 mW
R6 = 4.7KΩ 2% / 20 mW
R7 = 22 KΩ 2% / 10 mW
R8 = 80 Ω 20% / 10 mW
R9 = 80 Ω 20% / 10 mW

Q1 = { BCX 71J ou
BCW 70R (SOT23)
Z1 = LM 358 (SO-8)
Z2 = SIEMENS KSY 10

		Matière		Protection	
		Traitement		Poids	
		Tolérance gén.		Échelle	
Rep.	No. d'ensemble	Nb. par ensem.			
Établi:		WOBLER			
Date:					
9.8.90					
Vérifié:		03 170 A 002		3	
				26.10.90	
				Édi. Date	

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite

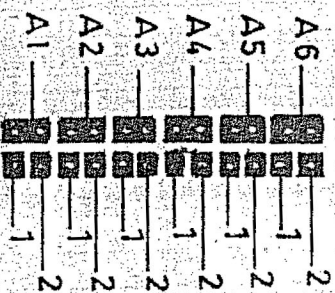
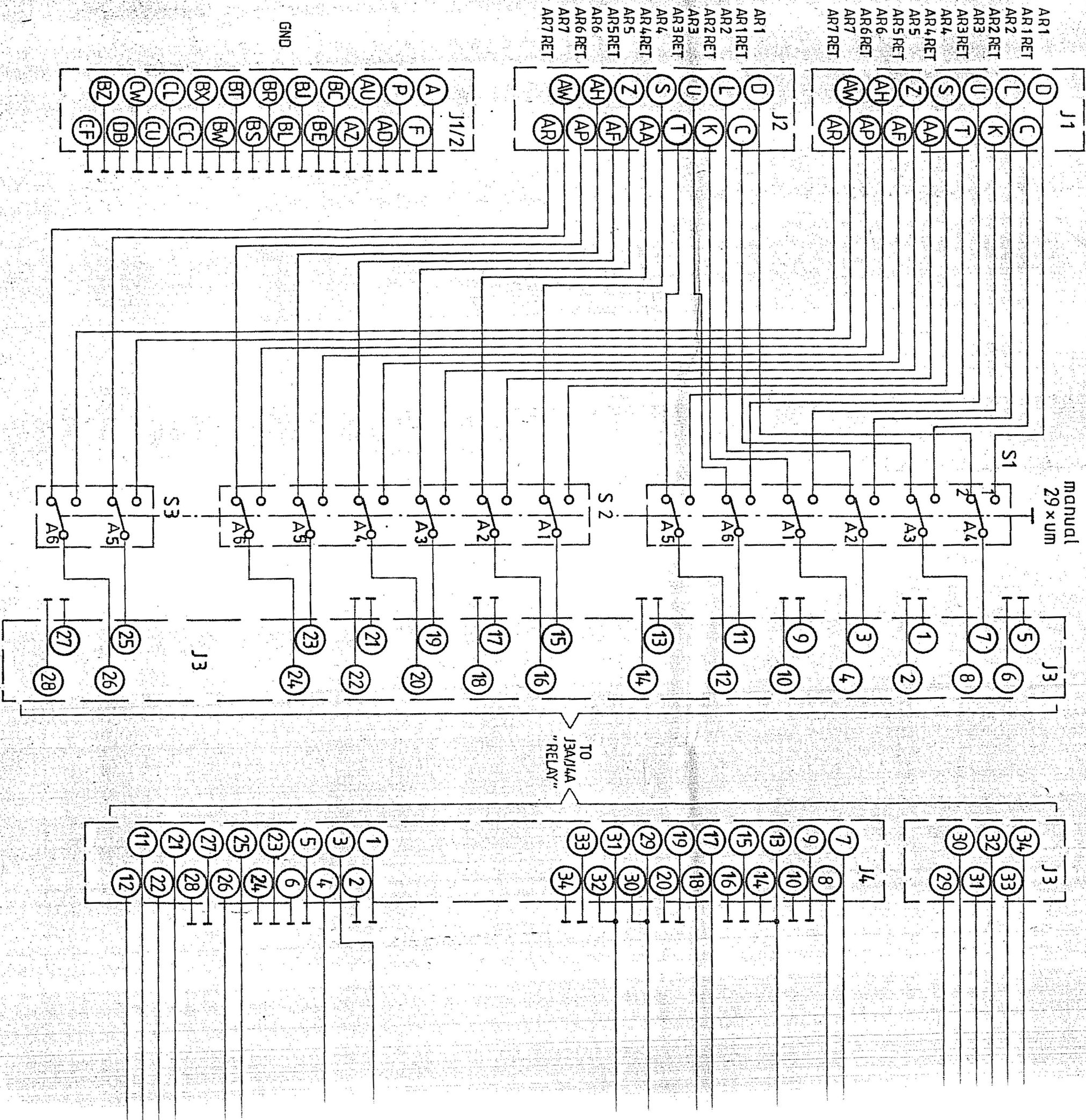


N°	Désignations	Code	Nature du fil	Couleur	Longueur
①	Prise DIN 6 broches		581518		
②	Manchon Ø3	797 197		Jaune	
③	Gaine tressée	717 762		Grise	300 mm
④	Fil	525 332	KY3005	Vert	350 mm
⑤	Fil	525 359	KY3005	Noir	350 mm
⑥	Fil	779 762	KY3005	Blanc	350 mm
⑦	Baïtier Mâle- J819 3 contacts femelles	842 796 811 882			
⑧	gaine retractable	717 665		Blanche	50 mm

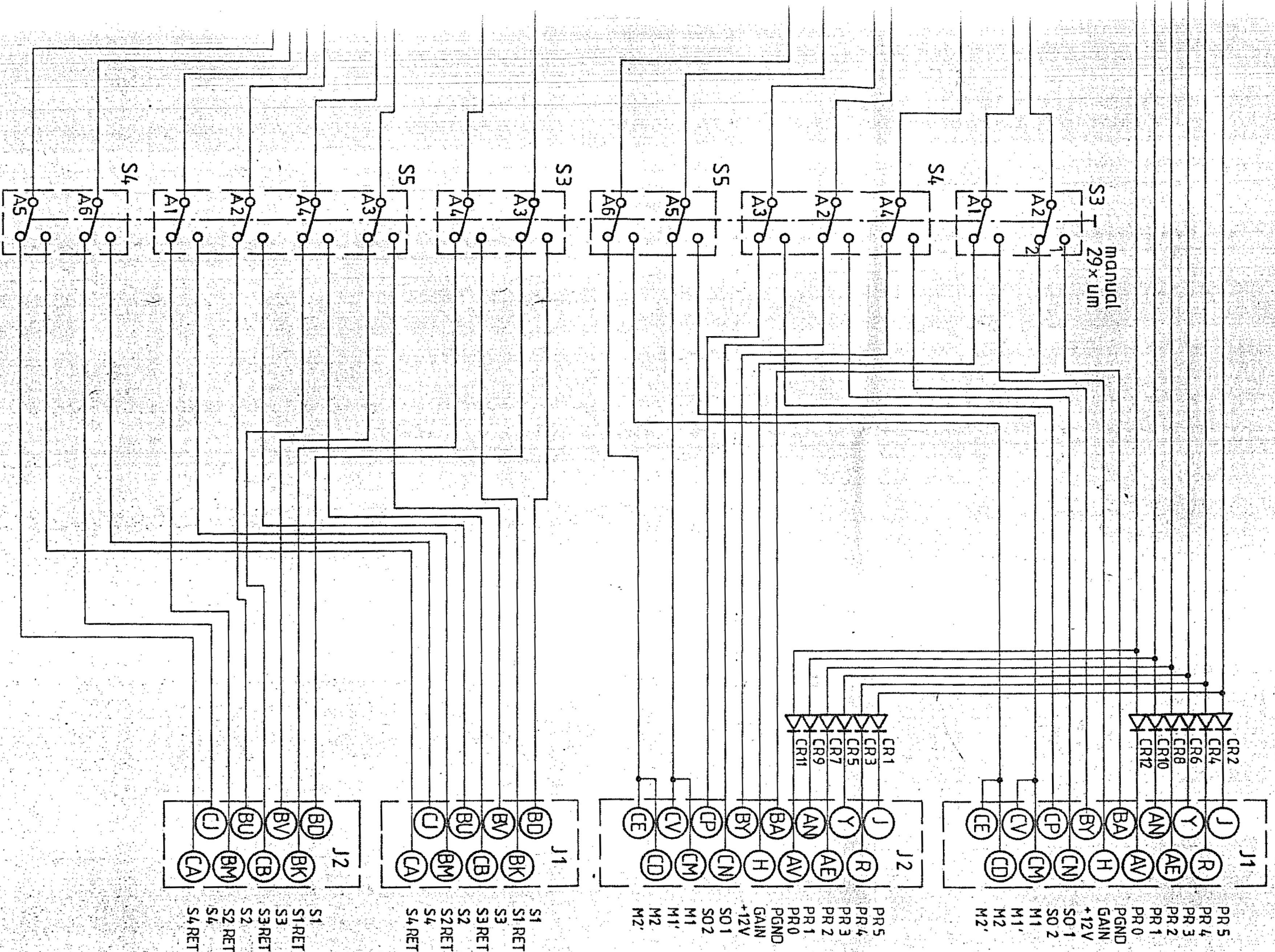
Fonction	DIN ①	MAT'N LOCK ⑦
2D/TM	1 ○ — ○ 3	vert
Freeze	3 ○ — ○ 2	blanc
Common	6 ○ — ○ 1	Noir

Rep.		N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli :		SIGMA 1		Traitement	Poids
H.M.				Tolérance Générale	Echelle
Date :		PEDALES-FREEZE-TM/2D		ROCHE bioélectronique KONTRON	
20-07-84		Code 856 274			
Vérifié :				1031 130 B 003	
05/84				1 14/2/85 Edi. Date	

MODIFICATIONS Validé le 14.2.85



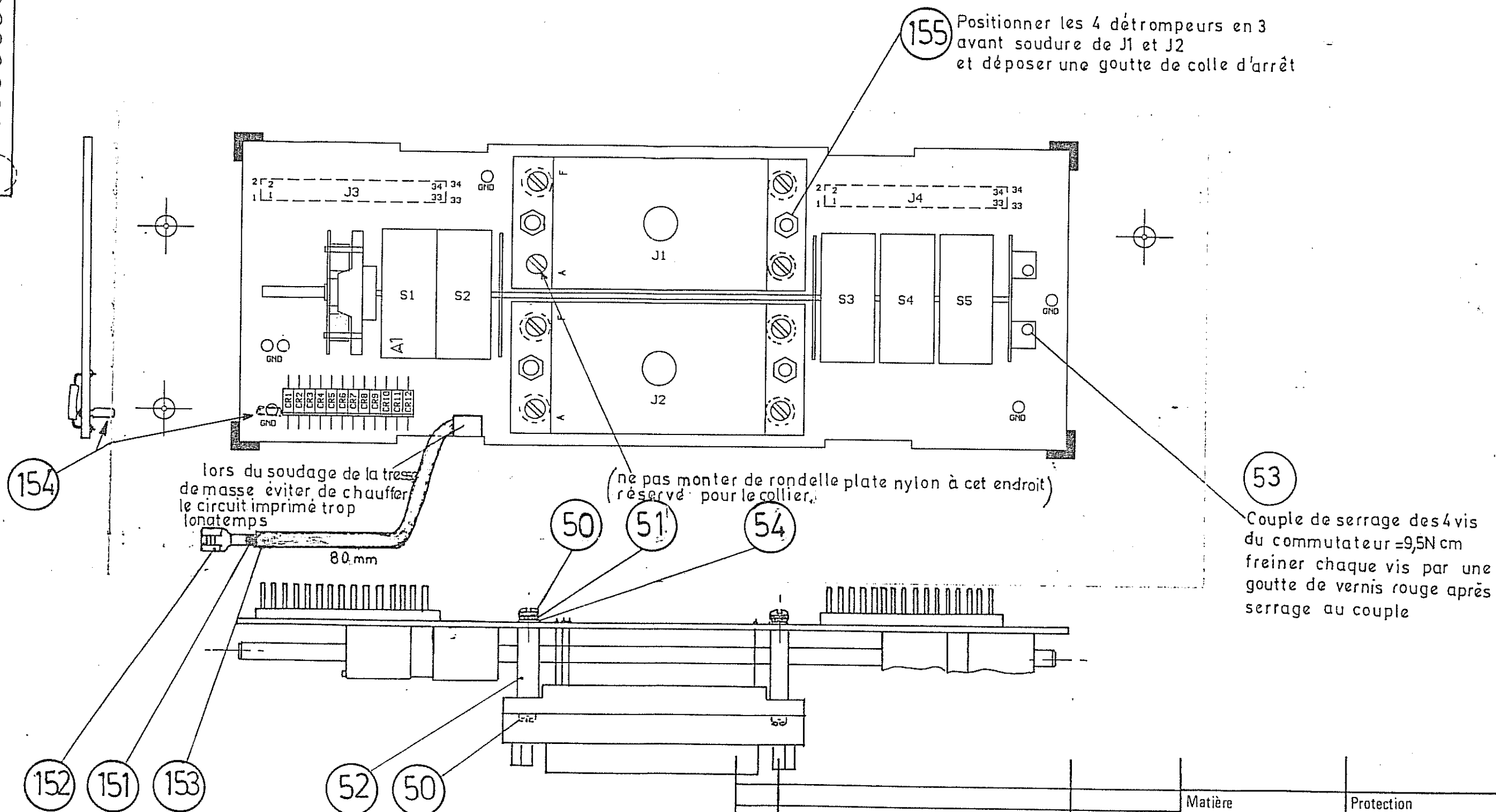
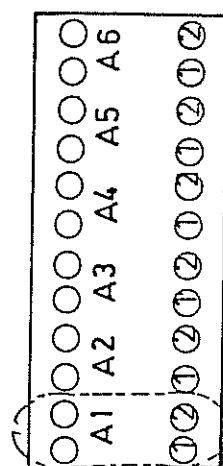
Rotary switch 6 pole S1 à S5



Etabl: HK		N° d'Ensemble		Ode par Ensemble		Matière:		Protection:	
Date: 11.2.87		AA SWITCHBOX		MALCO		Tolérance Générale		Echelle	
Vérifié: PCA 872121		03 180 C 001		KONTROL INSTRUMENTS		Poids:		Date: 2/07 92	

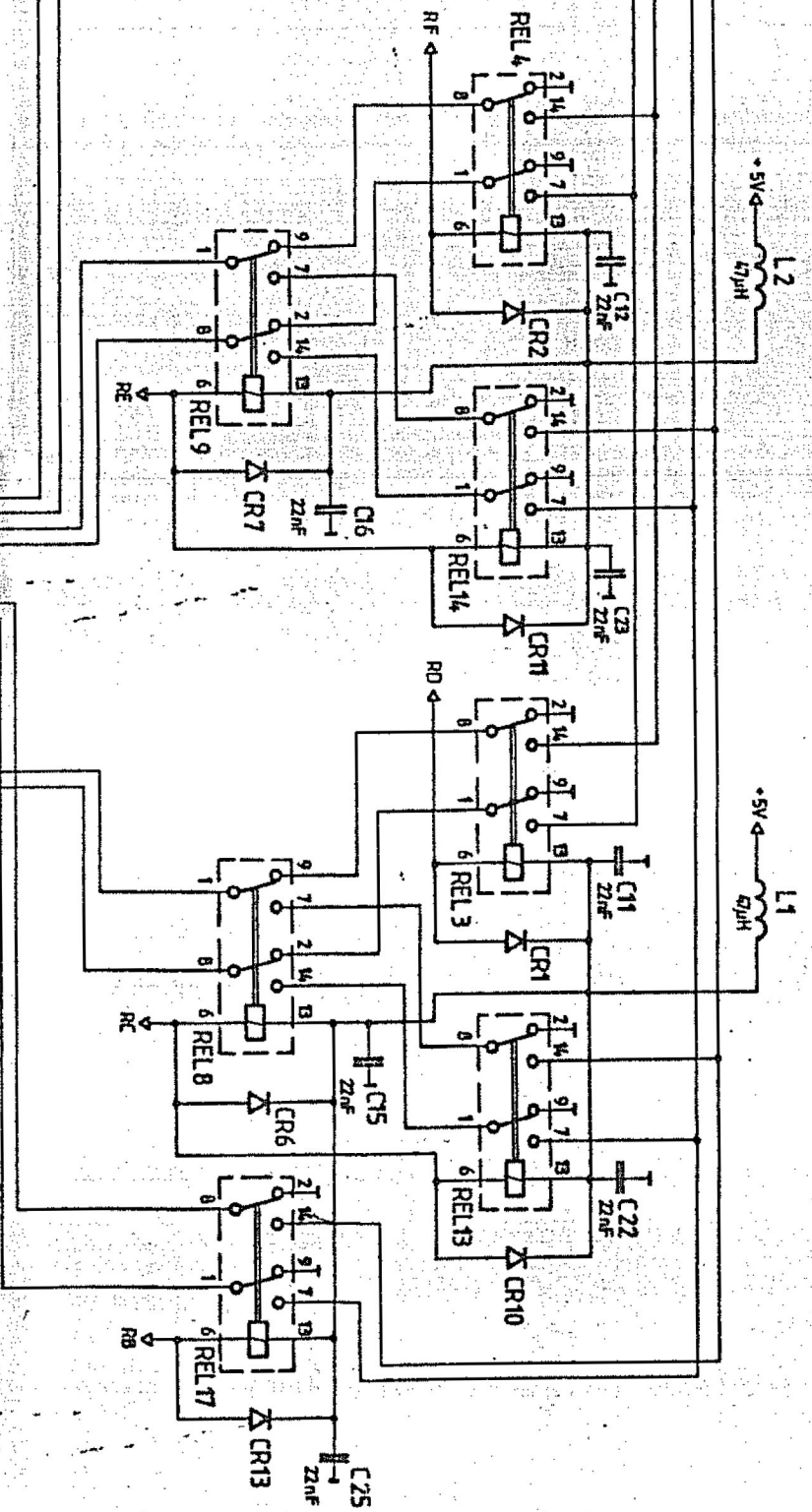
Ce document est la propriété de Roche et ne p être reproduit ou communiqué sans autorisation écrite

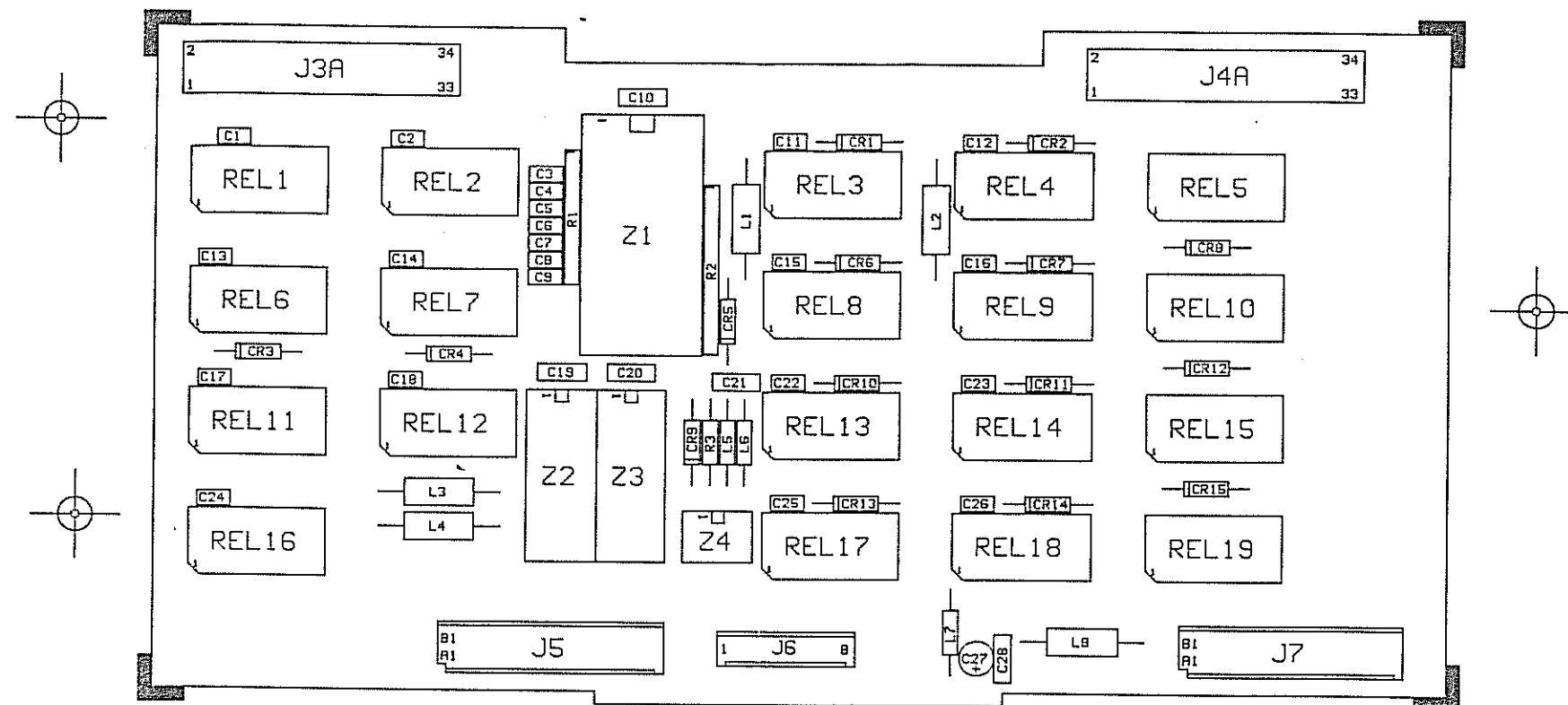
SI à S5 vus coté composants



Rep.	N° d'Ensemble	Q ^{te} par Ensemble	Matière	Protection
Etabli:	BJ	872 121	Traitement	Poids
Date :	23 11 87	AA SWITCH BOX	Tolérance Générale	Echelle 1
Vérifié:	Pca MALCO	03 180 B301		
			KONTRON INSTRUMENTS	3 2/07 92
			Edi.	Date

MODIFICATIONS: 2A) DC 03-91-164 JR. 3) Validé P. 2/7/92 4) DC N° 03-88-13/23-02-88 BJS - 2) Validé G. 1/03/88 BJS





MODIFICATIONS ① Validé 23-7-88 J.F.

		Matière		Protection	
		Traitement		Poids	
Rep.		N° d'Ensemble		Qté par Ensemble	
Etabli : BJ		872 156			
Date : 24 11 87		AA SWITCH BOX			
Vérifié : Y.P. 19/04/88		Pca Relay			
		03 180 B30.2		1 4-2 88 Edi. Date	

Ce document est la propriété de Kontron et ne peut être reproduit ou communiqué sans autorisation écrite

11. APPENDIX

This appendix contains :

. Glossary

GLOSSARY

A

Additionneur	Adder
Adhésif(ve)	Adhesive
Afficheur	Display
Alarme a distance	Remote alarm
Alarme sonore	Buzzer
Alimentation	Power supply
Amplificateur	Amplifier
Analogique	Analog
AND	AND

B

Barre bus	Bus bar
Barette	Connector block
Bascule	Flip-flop
Batterie	Battery
Berceau	Cradle
Bilatéral	Bilateral
Binaire	Binary
Bit	Bit
Blanc(che)	White
Bleu(e)	Blue
Blindage	Shielding
Blindé(e)	Shielded
Bobine	Coil
Bobine(e)	Coiled
Boitier	Case/Housing
Borne	Terminal
Buffer	Buffer
Buttée	Thrust-block

C

Cablage	Cabling
Cable	Cable
Cabochon	Cabochon
Canon isolant	Insulator
Caoutchouc	Rubber
Caractère	Character
Carbone	Carbon
Carré(e)	Square
Cavalier	Rider
Céramique	Ceramic
Cermet	Cermet
Collier	Collar
Commande	Control
Commutation	Switching
Comparateur	Comparator
Compteur	Counter
Condensateur	Capacitor
Convertisseur	Converter
Corps porte fusible	Fuse holder socket
Cosse	Thimble
Couche	Film/Sheet
Coupleur	Coupler
Courant	Current
Cuivre	Copper
Culot tube cathodique	CRT connector

D

Danger
Décodeur
Décompteur
Démultiplicateur
Dent
Diode
Double
Douille

Decoder
Up & down counter
Demultiplexer
Dent
Diode
Double
Socket

E

Eclateur
Ecrou
Electrochimique
Embase
Enrobé(e)
Entrée(s)
Et
Etame
Etiquette
Extracteur

Spark
Nut
Electrolytic
Collar
Coated/Covered
Input(s)
And
Tin
Label
Extractor

F

Fiche
Fil
Film

Pin
Wire
Film

G

Gaine

Tubing/Sheath

H

Habillage
Haute tention

Covering
High voltage

I

Intercalaire
Interface
Interrupteur
Inverseur
Isolation
Isolé

Spacer
Interface
Interrupter
Inverter
Insulation
Insulated

J

Joint

Joint/Connection/Coupling

K

Kit

Kit

L

LCD
 Linéaire
 Linéarisation
 Lithium

LCD
 Linear
 Linearity
 Lithium

M

Marron
 Mémoire
 Miniature
 Monostable
 MOS
 Multiplexeur

Brown
 Memory
 Miniature
 Single shot
 MOS
 Multiplexer

N

Nand
 Noir(e)

Nand
 Black

O

Operationnel
 OR
 Oscillateur
 Ou

Operationnal
 OR
 Oscillator
 Or

P

Passe fil
 Périphérique
 Pile
 Plat(e)
 Plot
 Polycarbonate
 Porte
 Potentiomètre
 Poussoir
 Prise
 Programmable
 Protection
 PVC

Wire carrier
 Peripheral
 Cell/Battery
 Flat
 Stud
 Plastic
 Holder
 Potentiometer
 Push button
 Plug/Socket
 Programmable
 Shelding
 PVC

Q

Quartz

Crystal

R

RAM
Référence
Régulateur
Relais
Remplacement
Repère
Réseau
Résistance
Rétractable
Rétriggerable
Rivet
Rond(e)
Rondelle
Rouge

RAM
Reference
Regulator
Relay
Alternative replacement
Guiding mark
Network
Resistor
Shrink
Retriggerable
Rivet
Round
Washer
Red

S

Schotky
Sélecteur
Sequenceur
Serti(e)
Sertir
SIL
Simple
Soude
Soude(e)
Souple
Spire
Support

Shotky
Selector
Sequensor
Locked
To lock
SIL
Simple/Single/Mono
Solder
Soldered
Flexible
turn
Socket

T

Tantale
Tension
Timmer
Toron
Touche
Transformateur
Transistor

Tantalum
Voltage
Timmer
Harner
Touchkey
Transformer
Transistor

V

Verrou
Vert(e)
Vis
Voie(s)

Bolt
Green
Screw
Channel

Z

Zener

Zener